

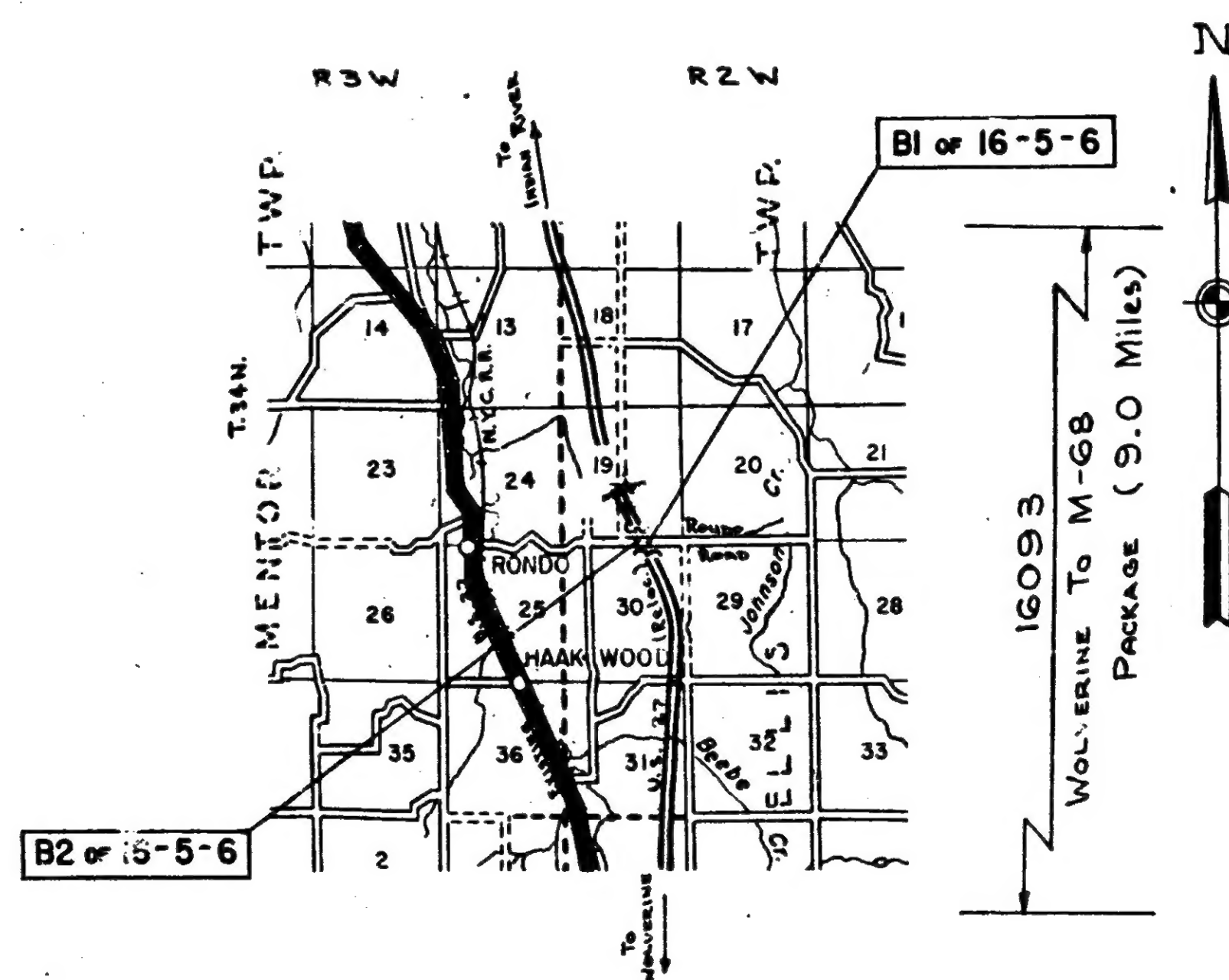
MICHIGAN
STATE HIGHWAY DEPARTMENT

JOHN C. MACKIE
STATE HIGHWAY COMMISSIONER

PLANS OF PROPOSED BRIDGES
MICHIGAN PROJECT I-75-4 (20) 293
GRAYLING - INDIAN RIVER ROAD
CHEBOYGAN COUNTY
ELLIS TOWNSHIP

SHEET NO.	DESCRIPTION
1	TITLE SHEET
2	GENERAL PLAN OF SITE
3	GENERAL PLAN OF STRUCTURE
4	BILL OF MATERIAL
5	ABUTMENT DETAILS
6	PIER DETAILS
7	SUPERSTRUCTURE DETAILS
8	SUPERSTRUCTURE DETAILS
9	SUPERSTRUCTURE DETAILS
10	SUPERSTRUCTURE DETAILS
11	STRUCTURAL STEEL DETAILS
12	STRUCTURAL STEEL DETAILS
13	EXPANSION DAM DETAILS
14	STEEL REINFORCEMENT DETAILS

2	GENERAL PLAN OF SITE
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10	SUPERSTRUCTURE DETAILS
11	STRUCTURAL STEEL DETAILS
12	STRUCTURAL STEEL DETAILS
13	EXPANSION DAM DETAILS
14	STEEL REINFORCEMENT DETAILS
104	ALUMINUM RAILING, DRAIN CASTING, BAR CHAIR MOLDING AND BEVEL DETAILS



GENERAL NOTES

Except where otherwise indicated on these Plans or in the Proposal and Supplemental Specifications contained therein, all materials and workmanship shall be in accordance with the Michigan State Highway Department's Standard Specifications for Road and Bridge Construction, 1960 Edition.

The design of this structure is based on the Michigan State Highway Department's Specifications for the design of Highway Bridges, 1958 Edition, H15-44 Loading, Live load plus impact deflection = 1/800 of span length.

The character of all materials and the extent thereof as shown by borings has been obtained by methods and from sources believed to be reliable. The exactness of this information is, however, in no case guaranteed. Boring samples are on file in the Design Office at Lansing and are available for inspection.

All exposed concrete corners shown square on the Plans shall be beveled with 1/2" triangular moldings except as otherwise noted.

The stationing as shown on these plans for the intersection of the Survey centerline and Bridge Construction centerline of Rondo Road and the Survey centerline of U.S.-27 (Relocated) is believed to be correct. It shall, however, be checked at time of starting construction and if the stationing shown on the plans is incorrect it shall be reported to the Design Office at Lansing and the structure shall be staked out using the actual intersection of the Survey centerline and Bridge Construction centerline of Rondo Road and the Survey centerline of U.S.-27 (Relocated) as the control point.

NOTE:
Where the following items are called for on the Plans, they are to be constructed according to the Standard Plan given below opposite each item, unless otherwise indicated.

STANDARD PLANS TO BE PRINTED

SHEET NO.	TITLE
SP2D	STANDARD SLOPE PAVING DETAILS

STANDARD PLANS NOT TO BE PRINTED

SHEET NO.	TITLE

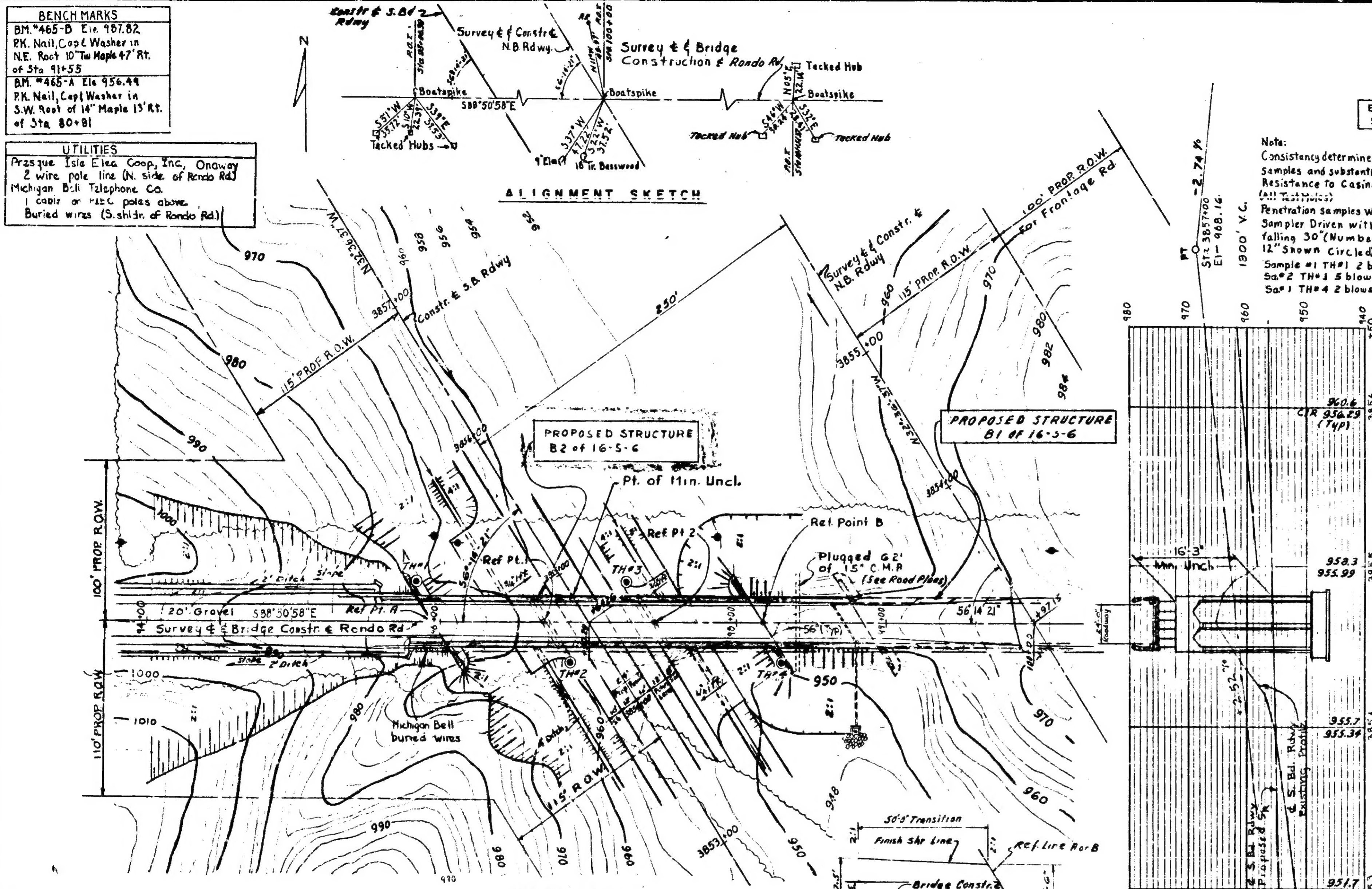
CONTROL SECTION NO. 16093RN	
CONTRACT FOR G & DS, Surf. & Str.	
DIVISION APPROVAL	
CHECKED	ENGINEER OF DESIGN
RECOMMENDED FOR APPROVAL	ENGINEER OF BRIDGE AND ROAD DESIGN
RECOMMENDED FOR APPROVAL	TRAFFIC ENGINEER
OFFICES OF DESIGN AND CONSTRUCTION	
APPROVED	CONSTRUCTION ENGINEER
APPROVED	CHIEF DESIGN ENGINEER
STATE HIGHWAY DEPARTMENT APPROVAL	
APPROVED	JOHN C. MACKIE STATE HIGHWAY COMMISSIONER
BY	DIRECTOR OF ENGINEERING CHIEF ENGINEER
PLANS PREPARED BY	
MICHIGAN STATE HIGHWAY DEPT.	
DEPARTMENT OF COMMERCE BUREAU OF PUBLIC ROADS	
APPROVED	
DIVISION ENGINEER	

FILE NO. 16-5-6
B1 & B2 of 16-5-6

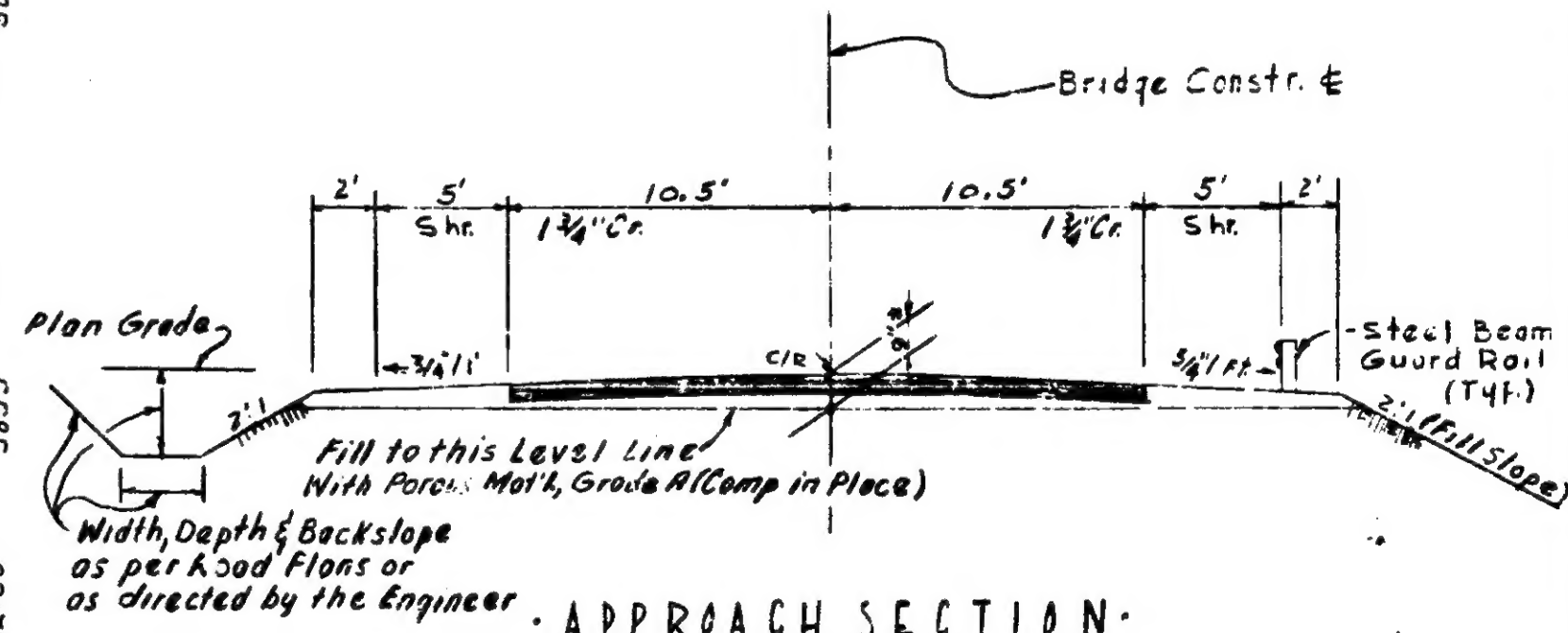
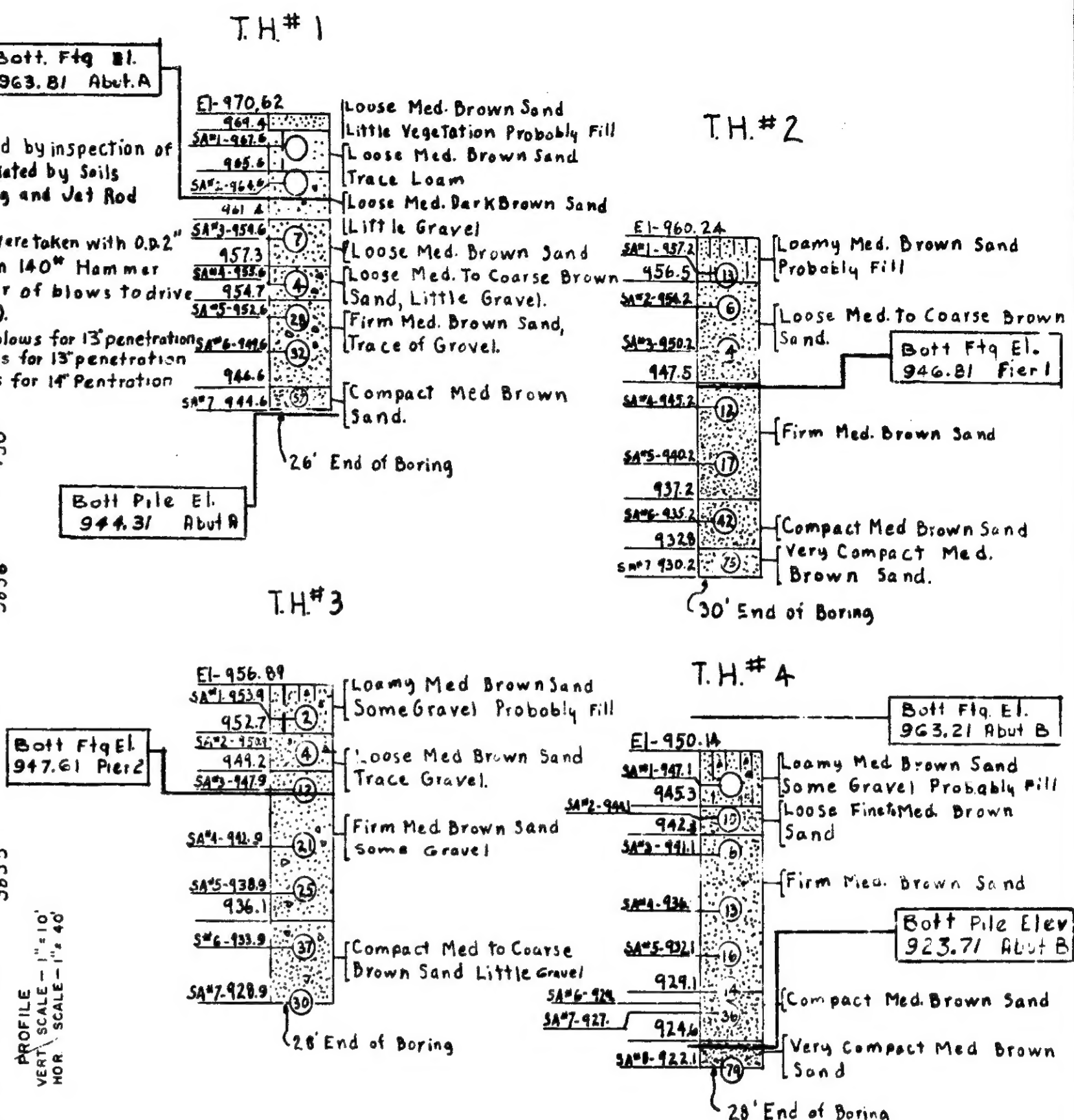
LOG OF BORINGS

BENCH MARKS	
BM. #465-B	Elev. 987.82 P.K. Nail, Cap & Washer in N.E. Root 10" Tw Maple 47' Rt. of Sta 91+55
BM. #465-A	Elev. 956.49 P.K. Nail, Cap & Washer in S.W. Root of 14" Maple 13' Rt. of Sta 80+81

UTILITIES
 Prasque Isle Elec. Coop., Inc., Onaway
 2 wire pole line (N. side of Rondo Rd.)
 Michigan Bell Telephone Co.
 1 cable on RICC poles above.
 Buried wires (S. side of Rondo Rd.)

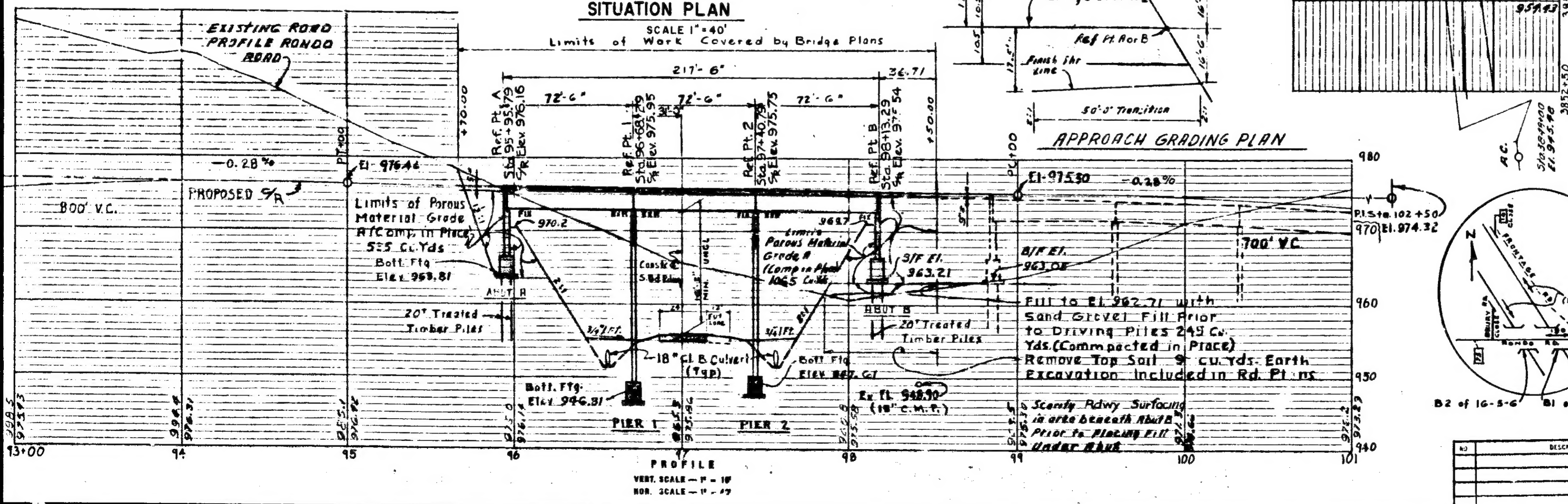


Note:
Consistency determined by inspection of
samples and substantiated by Soils
Resistance to Casing and Jet Rod
(all 2 to 3 in.)
Penetration samples were taken with 0.22"
Sampler Driven with 140" Hammer
falling 30" (Number of blows to drive
12" Shown Circled).
Sample #1 TH#1 2 blows for 13" penetration
Sample #2 TH#1 5 blows for 13" penetration
Sample #3 TH#4 2 blows for 14" Penetration



NOTE: Clearing of S. 27 Roadway flood drainage work in the vicinity of the structure are included with road plans. These items of work shall be done prior to starting work on the bridge.

The work covered by these plans includes construction of the proposed bridge, placing armor material grade behind the front of the abutments and placing slaps protection Class "A" to the limits shown. The Contractor shall locate underground utilities prior to starting work & shall conduct his operations in such a manner as to insure that they will not be disturbed.



1978 Estimate

TRAFFIC VOLUME

0000 R.D.V.

0000 D.H.V.

0000 COMMERCIAL

0000 A.D.V. (1958)

CONTROL SECTION NO. 16093RN

MICHIGAN STATE HIGHWAY DEPARTMENT

1-75 U.S. 27(Reloc.) S.B.XING RONDO ROAD 3.6 MILES N.E. OF WOLVERINE

10/27/75

GENERAL PLAN OF SITE

SOUND BBS	<i>9:55 a.m.</i>	<i>11-17-76</i>
MAINT BY	<i>D.W.F./m</i>	<i>11-19-76</i>
TRACED BY		
CHECKED BY	<i>A.J.</i>	<i>11-17-76</i>
EMT	<i>2</i>	<i>14</i>

APPROVED *J.V. Morrison* *12-7-76*

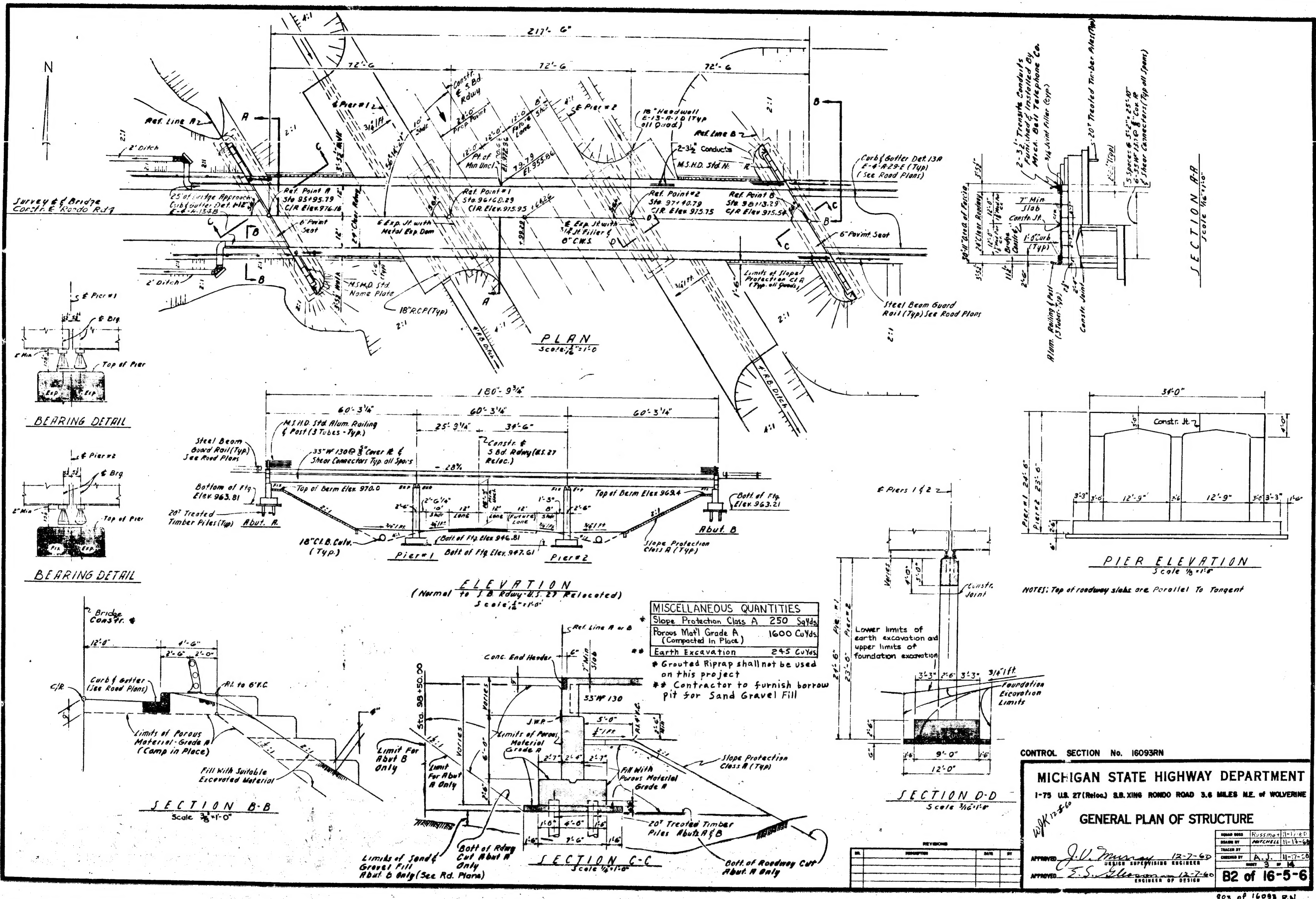
CHIEF SUPERVISING ENGINEER

APPROVED *E.S. Silsbee* *12-7-76*

ENGINEER OF DESIGN

DATE	BY

B2 of 16-5-6



ITEM	UNIT	QUANTITY	DATE					Totals	PLAN EXTRAS									
			A 8/7/61	B 8/7/61	C 8/24/61	D 3/4/63	E 3/4/63		DATE	DESCRIPTION	UNIT	QUANTITY ESTIMATE	FINAL					
BRIDGE																		
Earth Excavation	Cu. Yds.	245					-626		871									
Unclassified Excavation	Cu. Yds.	300		+21					321									
Treated Timber Piles -Furnished	Lin. Ft.	1566		-418					1150									
Treated Timber Piles -Driven	Lin. Ft.	1440		-4861					953.9									
Cutoff-Treated Timber Piles	Each	48							48									
Treated Timber Test Piles	Each	4							4									
Grade A (6A) Concrete - Substructure	Cu. Yds.	205							205									
Grade A (6B) Concrete - Substructure	Cu. Yds.	128.6							128.6									
Grade A (6B) Concrete - Superstructure	Cu. Yds.	238.9			+13.7				244.6									
Cement	Bbls.	808			+32				840									
Steel Reinforcement	Lbs.	64029							64029									
Structural Steel Fabrication & Erection	Lbs.	209,100		-1564					207,536									
Shear Connectors	Lump Sum	L.S.							Lump Sum									
1/2" Joint Filler	Sq. Ft.	92							92									
3/4" Joint Filler	Sq. Ft.	61							61									
Hot-Poured Rubber-Asphalt Type Filler	Lin. Ft.	74							74									
Joint Waterproofing	Sq. Ft.	280							280									
Copper	Lbs.	180							180									
Aluminum Bridge Railing-Fabrication & Erection (3 tube)	Lin. ft.	435							435									
Field Painting	Lump Sum	L.S.							Lump Sum									
Slope Protection Class A	Sq. Yds.	250			+42				292									
Porous Material Grade A (Comp. in Place)	Cu. Yds.	1000					-626		974									
Balanced by G.E.D. 5/29/63 CKD-R.O.C. - 5/29/63																		
MICHIGAN STATE HIGHWAY DEPARTMENT																		
BILL OF MATERIAL																		
<table><tr><td>DESIGN BY</td><td>ED.C. 11-5-60</td></tr><tr><td>CHECKED BY</td><td>A.J. 12-2-60</td></tr><tr><td>SHEET</td><td>4 of 14</td></tr></table>													DESIGN BY	ED.C. 11-5-60	CHECKED BY	A.J. 12-2-60	SHEET	4 of 14
DESIGN BY	ED.C. 11-5-60																	
CHECKED BY	A.J. 12-2-60																	
SHEET	4 of 14																	
B2 of 16-5-6																		

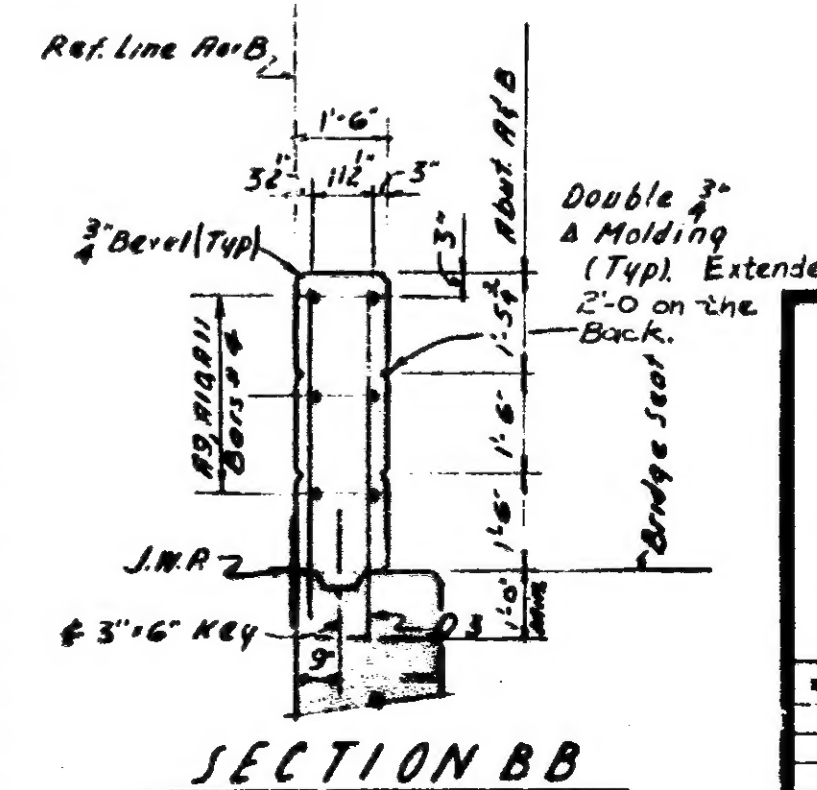
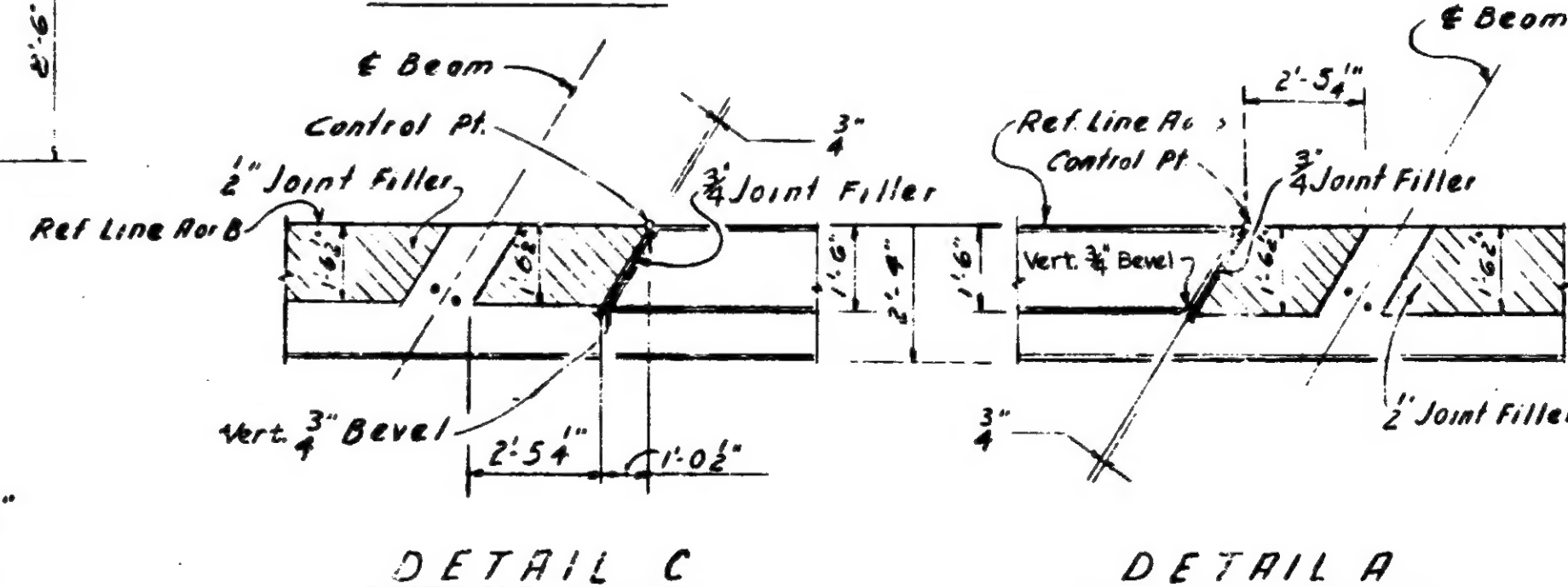
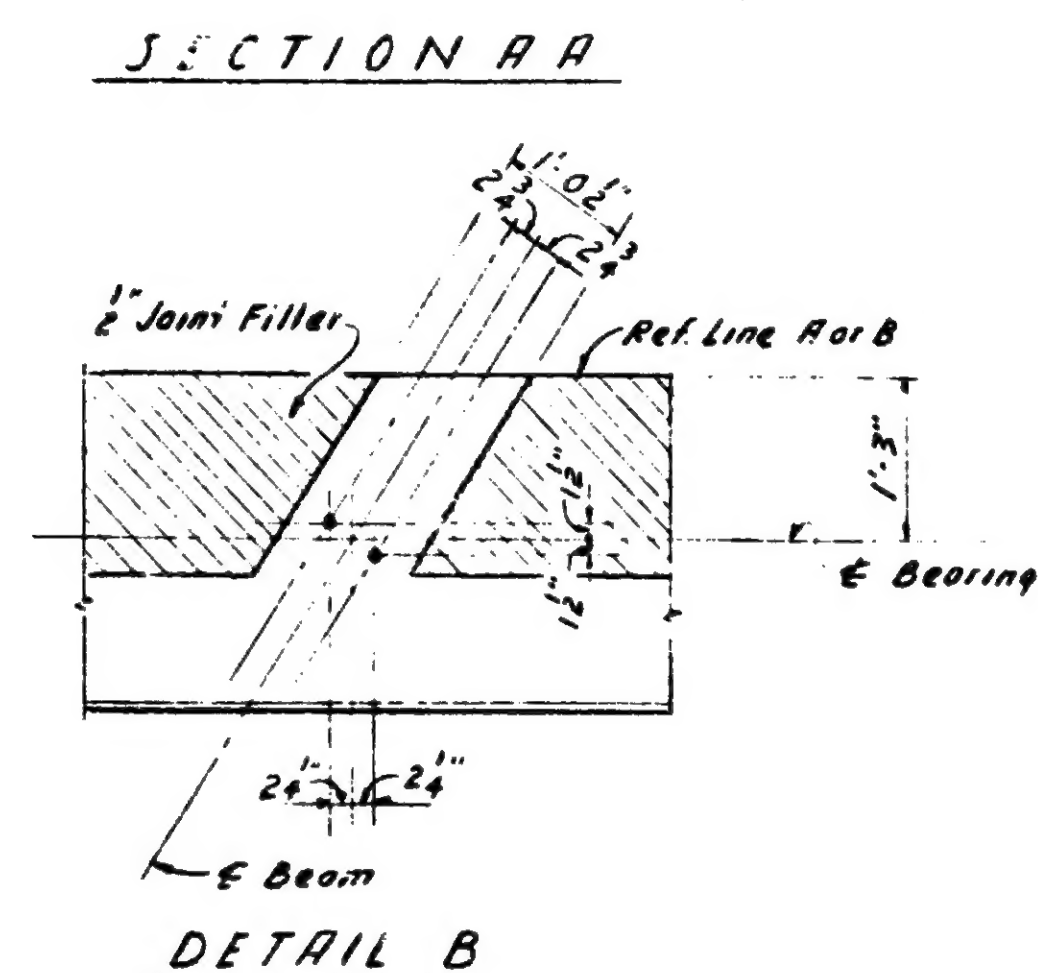
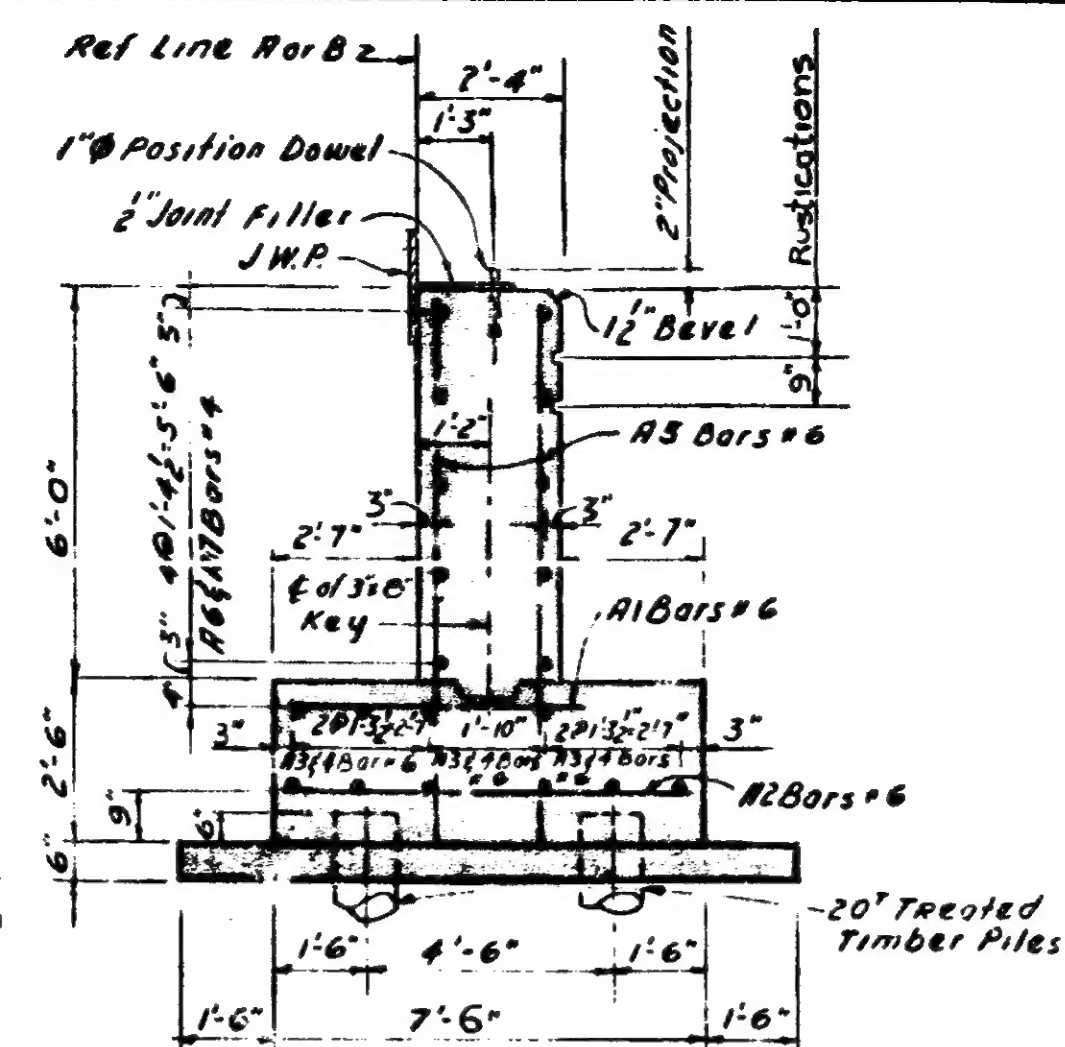
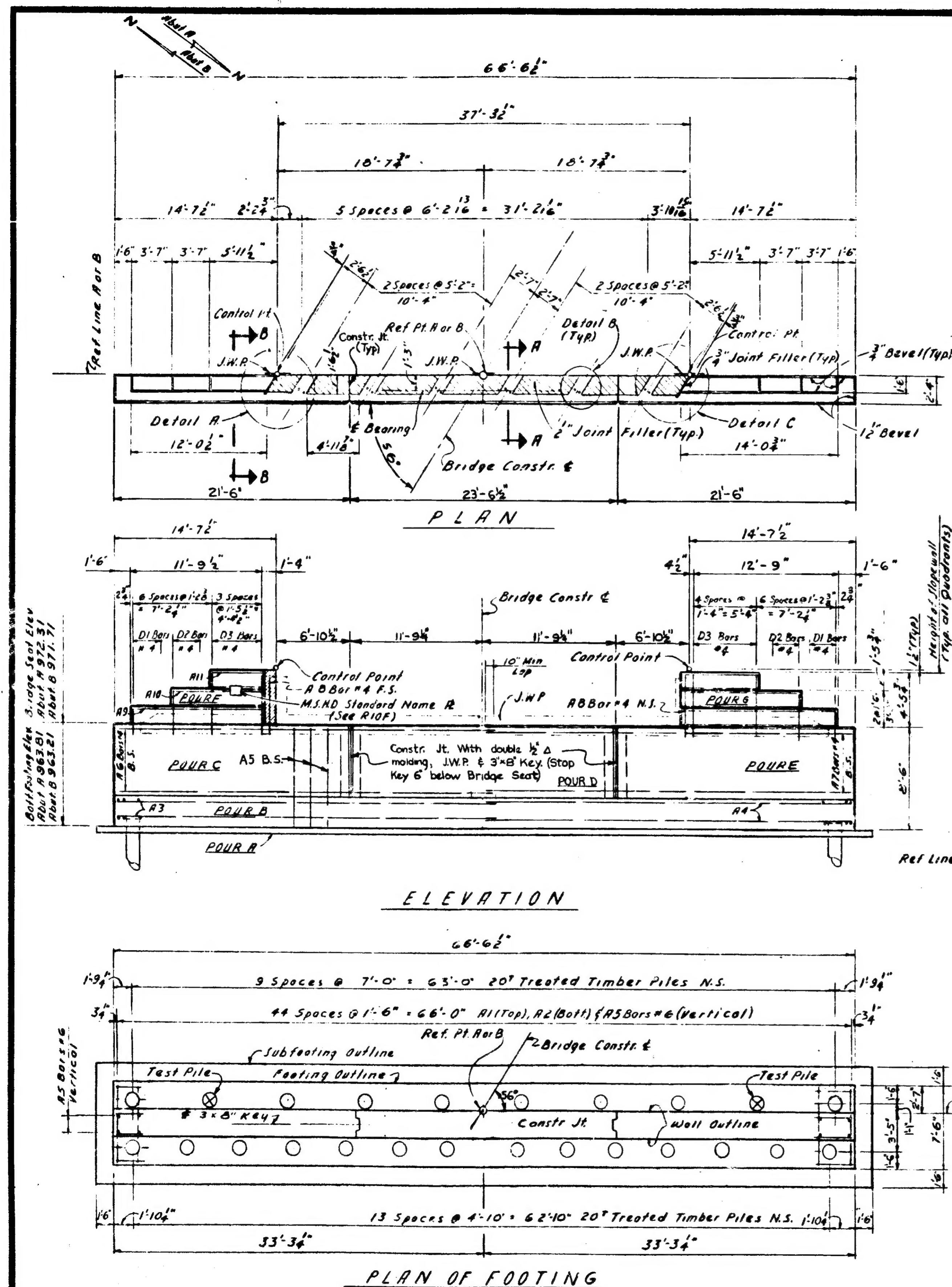
Balanced by G.E.D. 5/29/63
CKD - F.O.C. - 5/29/63

MICHIGAN STATE HIGHWAY DEPARTMENT

BILL OF MATERIAL

DESIGNED BY	PLANNING CO. 9-60
DRAWN BY	F.O.C. 11-5-60
CHECKED BY	A.J. 12-2-60
SHEET	4 of 14

B2 of 16-5-6



QUANTITY TREATED TIMBER FILES									
LOCATION	TYPE	NO PROD	S7CH PILE			TOTAL			CUT OFF ELEVATION
			Full Lin PR	Drwn Lin PR	Cut Off Each	Full Lin PR	Drwn Lin PR	Cut Off Each	
ABUT A	○ Vert	22	22	20	1	484	440	22	964.31
	⊗ Test	2	30	20	1	60	40	2	964.31
	Total	24				544	480	24	
ABUT B	○ Vert	22	42	40	1	924	880	22	963.71
	⊗ Test	2	50	40	1	100	80	2	963.71
	Total	24				1024	960	24	
Grand Total Abut A & B		48				1568	1440	48	

MISCELLANEOUS QUANTITIES				
ITEM	UNIT	AMOUNT		Total About A & B
		ABUT A	ABUT B	
Joint Waterproofing	Sq.Ft.	140	140	280
"1/2" Joint Filler	Sq.Ft.	45.9	45.9	92
3/4" Joint Filler	Sq.Ft.	16.7	16.7	33

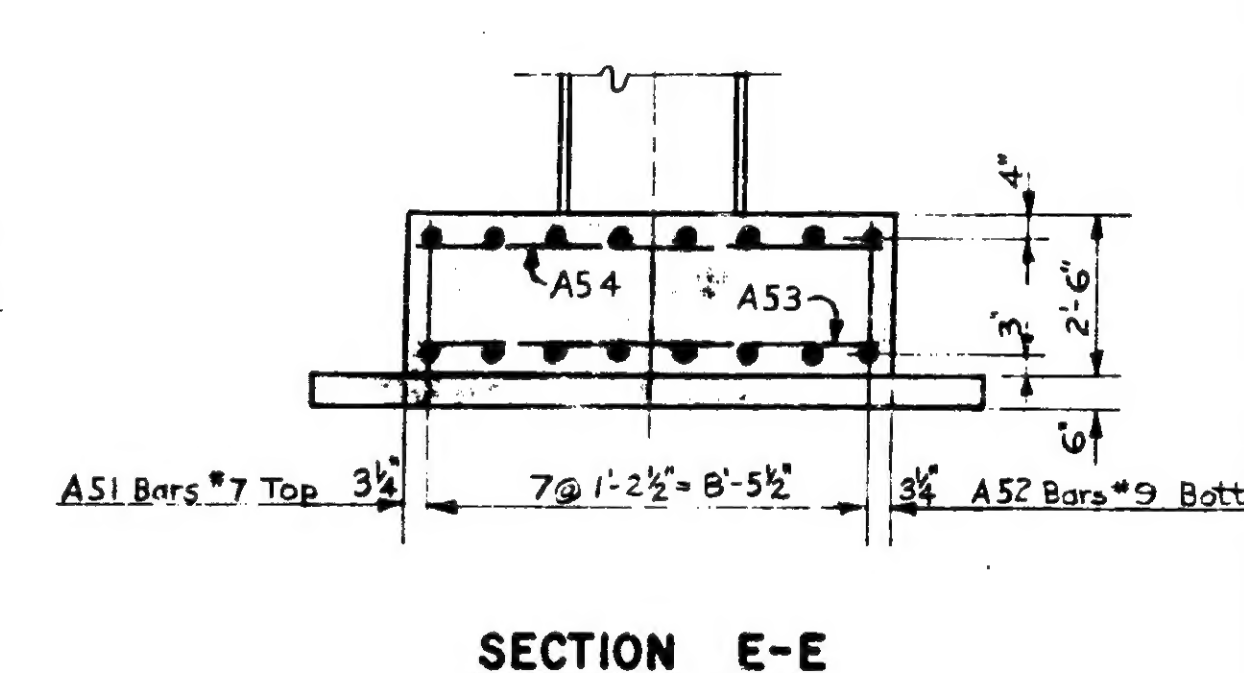
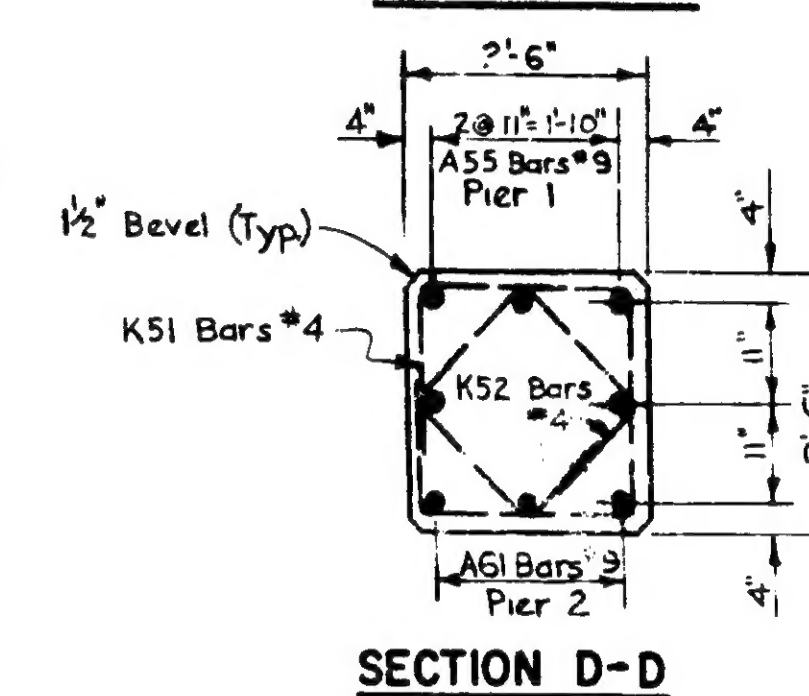
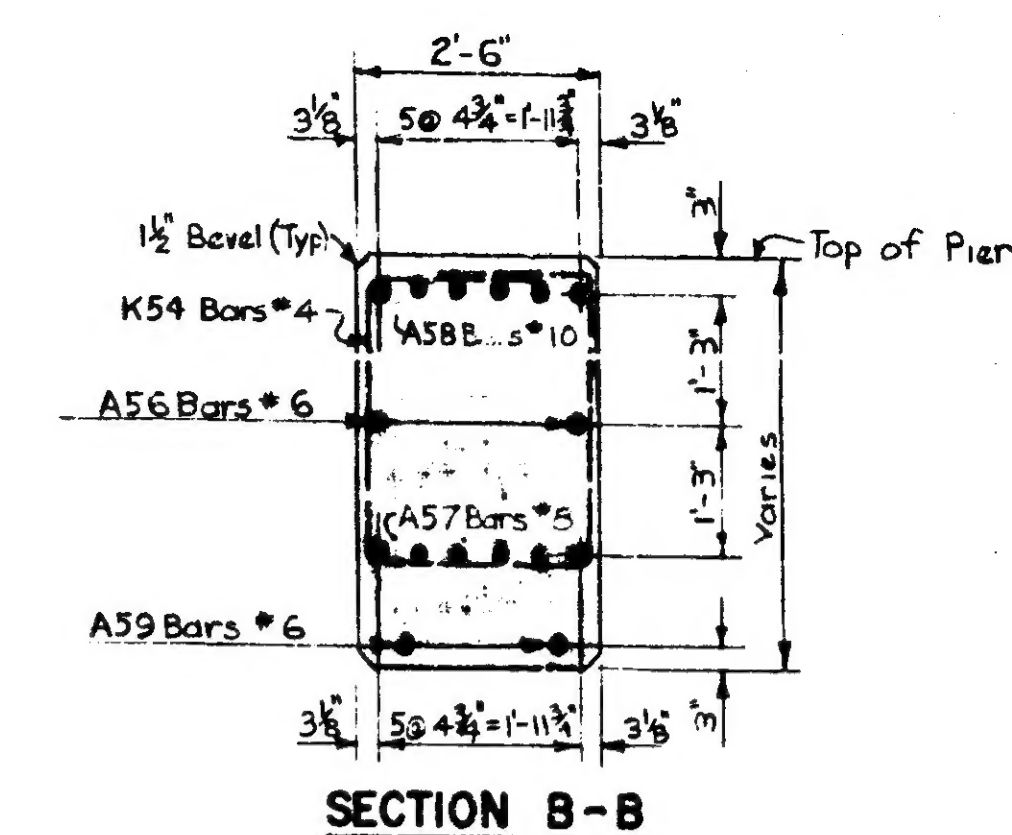
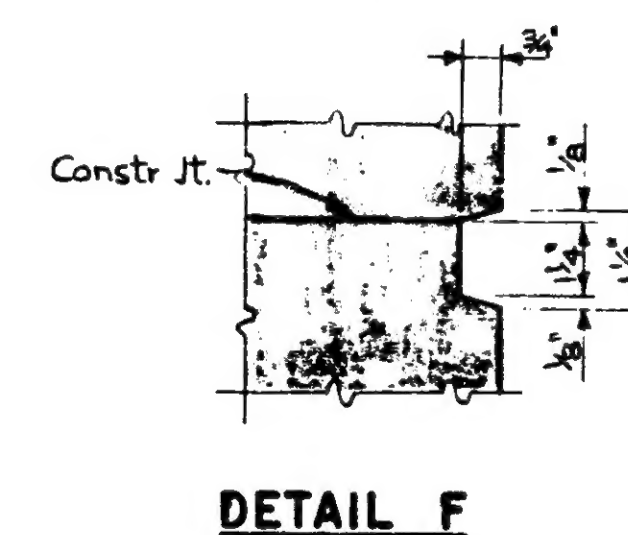
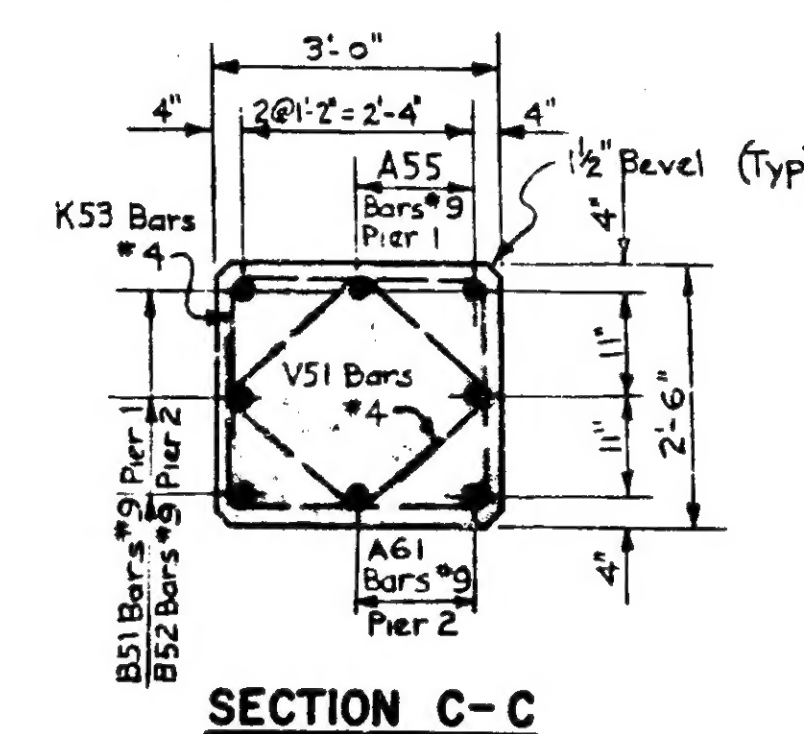
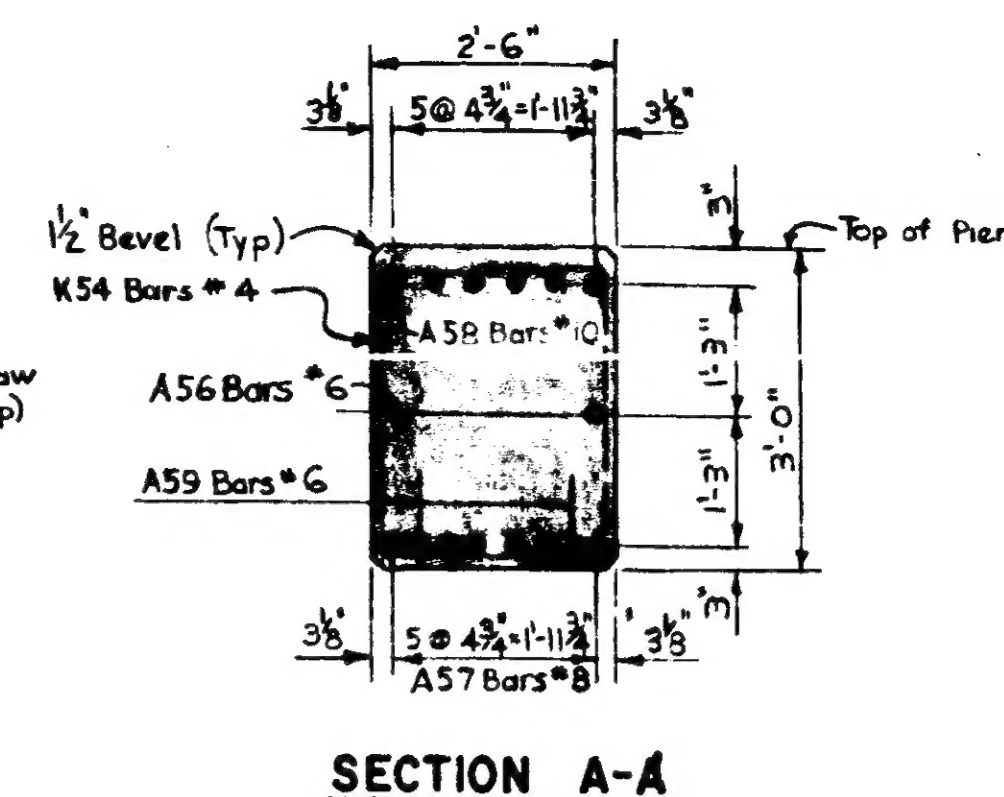
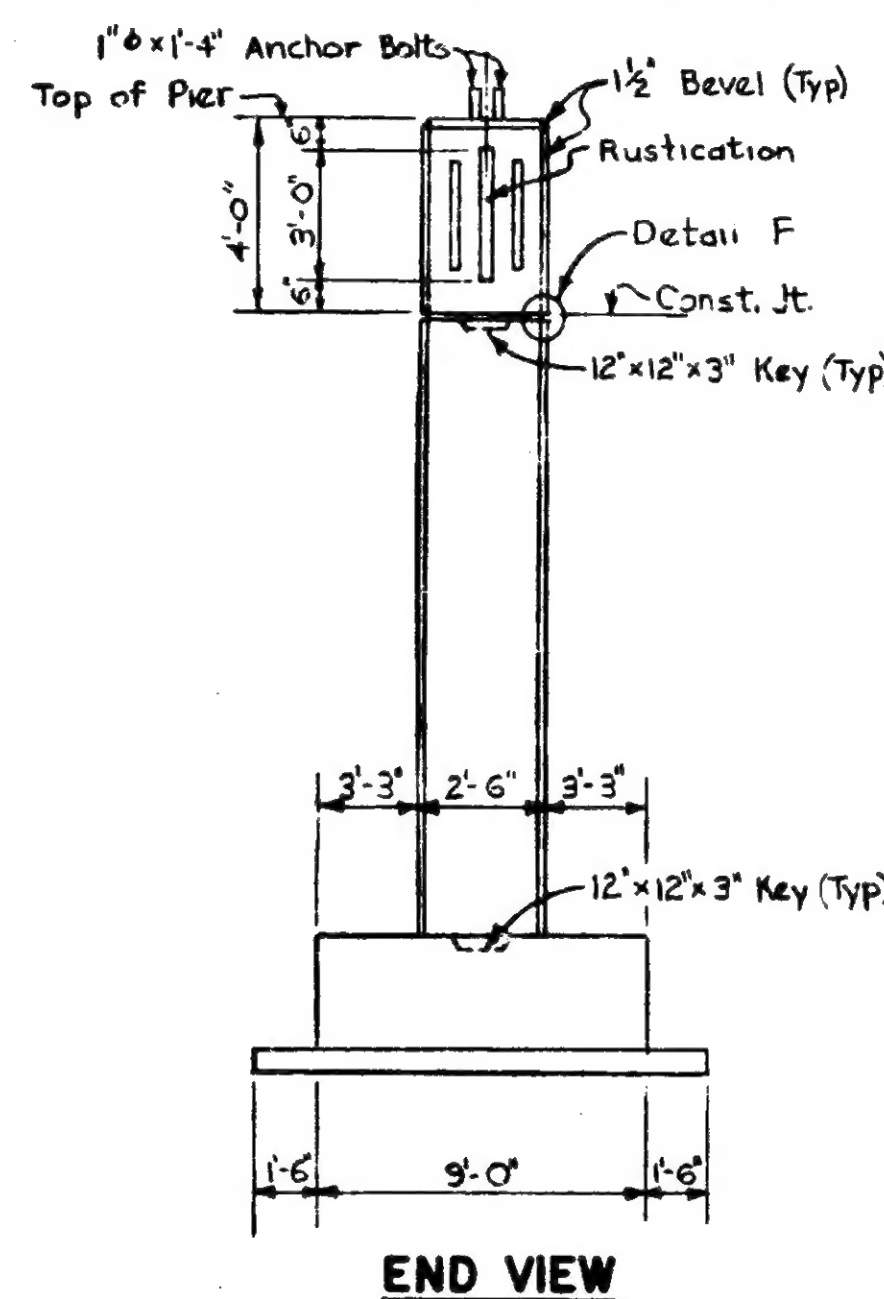
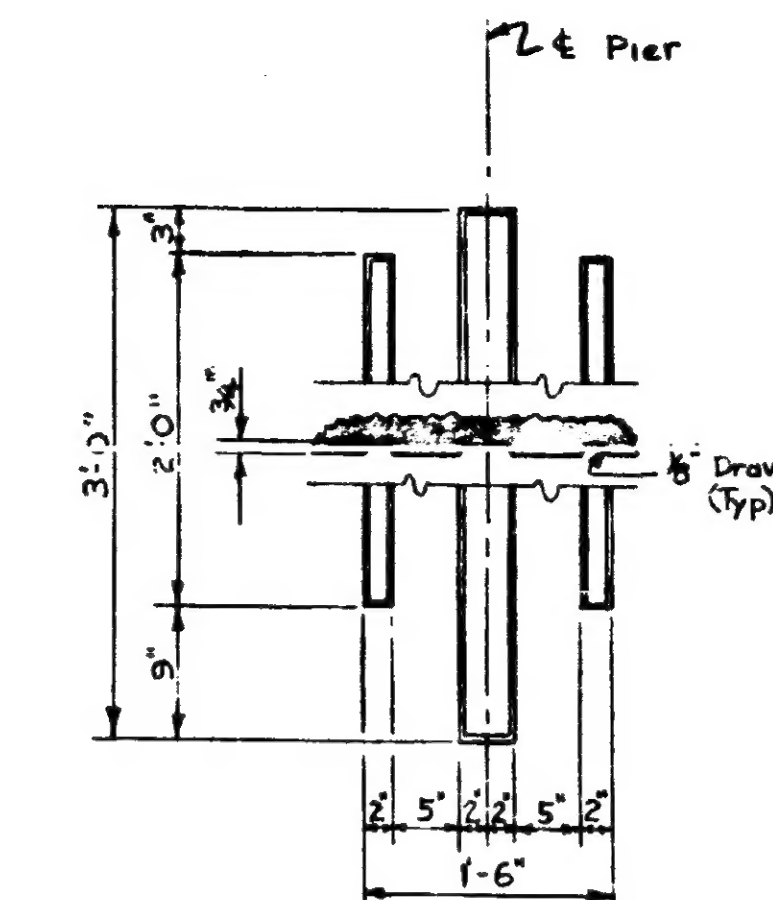
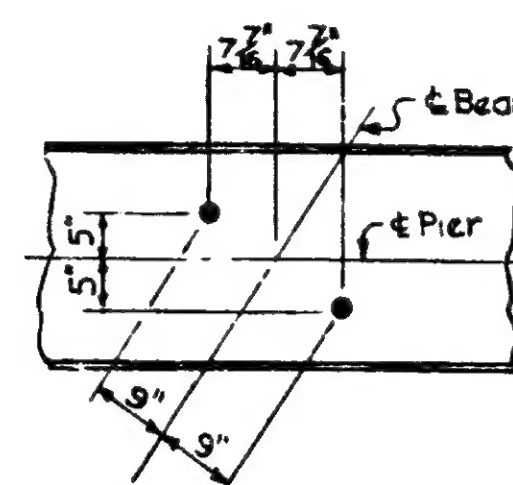
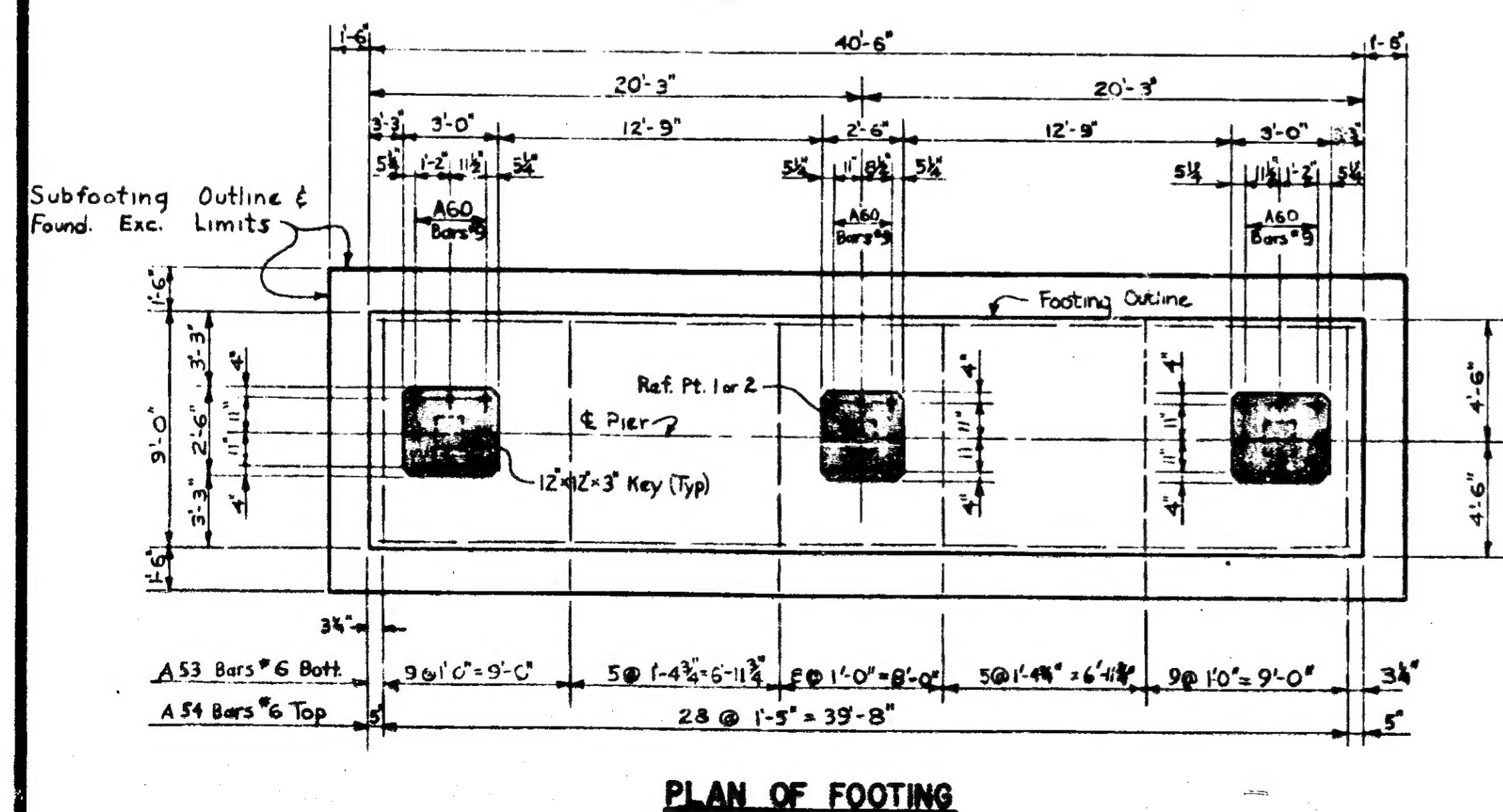
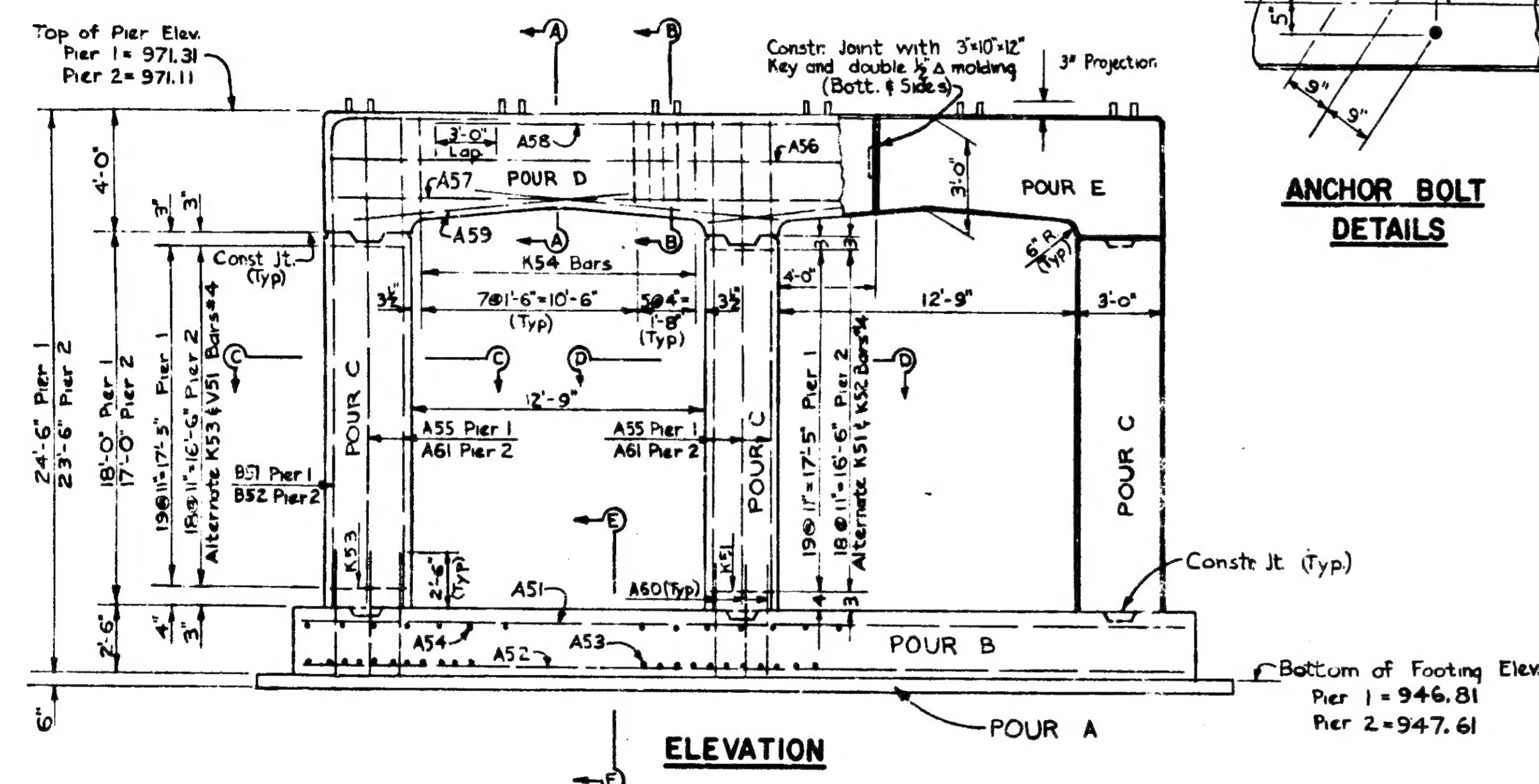
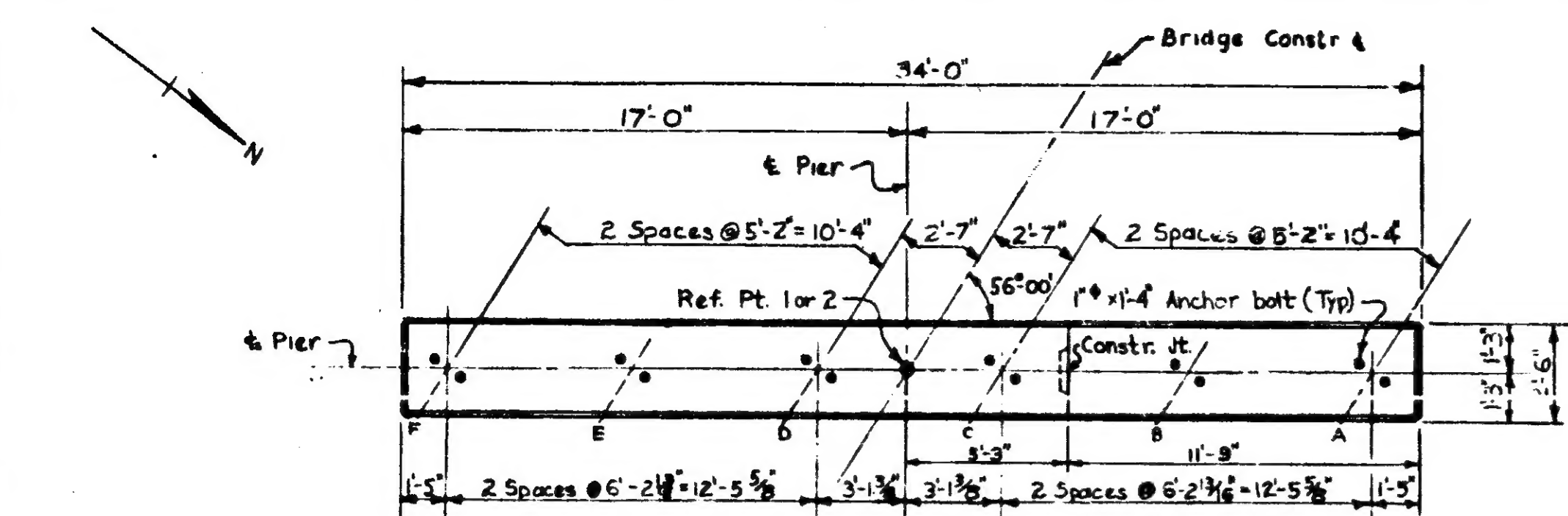
NOTES:
 1. Footments are similar except where noted
 J.W.P. denotes joint waterproofing
 N.S. denotes nearside
 F.S. denotes forside
 B.S. denotes bothsides
 Slope walls are to be cast after
 superstructure is complete to top of sidewalk.
 Position dowels shall be set accurately to a template.
 The bridge seat shall be finished to a true plane of the
 elevation shown and shall not vary more than 1/8" under
 a ten foot straight edge (not more than 1/16" under any
 bearing).
 All piles shall be driven to a minimum bearing capacity
 of 20 tons
 For bavel & molding details, see sheet # R10F

GRADE A CONCRETE QUANTITIES - Cu Yds				
POUR	ABOUT A		ABOUT B	
	A (cu yd)	A (cu ft)	B (cu yd)	B (cu ft)
A	15.2		13.2	
B	45.3		45.8	
C		11.1		11.1
D		12.2		12.2
E		11.1		11.1
F		2.2		2.2
G		2.5		2.5
TOTAL (cu yd)	59	39.1	59	39.1
TOTAL (cu ft)	118.0			
Total (cu ft)	78.2			

MICHIGAN STATE HIGHWAY DEPARTMENT
ABUTMENT DETAILS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

SQUAD BOSS	Russman 11-19-60
DRAWN BY	Mitchell 10/60
TRACED BY	
CHECKED BY	F.O.C. 11-17-60
SHEET 5 of 14	
B2 of 16-5-6	



MISCELLANEOUS QUANTITIES				
ITEM	UNIT	PIER 1	PIER 2	TOTAL
Foundation Excavation	Cu Yds	150	150	300

GRADE A CONCRETE QUANTITIES - CUBIC YARDS					
POUR	LOCATION	PIER #1		PIER #2	
		(6A)	(6B)	(6A)	(6B)
A	Subfooting	9.7		9.7	
B	Footing	33.8		33.8	
C	Columns		14.2		13.4
D	Girder		7.6		7.6
E	Girder		3.9		3.9
Subtotal		43.5	25.7	43.5	24.9
Total - (6A)		87.0 cu yds.			
Total - (6B)		50.6 cu yds.			

Notes:

Anchor bolts shall be set accurately to a template.

Piers are similar except as noted.

For Bevel & Molding details, see Std. Sh R-10-F

Anchor bolts are to be set accurately to a template.

The tops of piers shall be finished to a true plane at the elevation shown and shall not vary more than $\frac{1}{16}$ " under a ten foot straight edge and not more than $\frac{1}{16}$ " under any bearing.

Reinforcing steel spacing in girders is to be adjusted as required to facilitate setting of anchor bolts.

This design is based on a maximum foundation pressure of 2400 pounds per square foot and a maximum average foundation Pressure of 1850 pounds per square foot.

The Project Engineer shall adjust the spacing of the reinforcing steel as required to permit placing of anchor bolts.

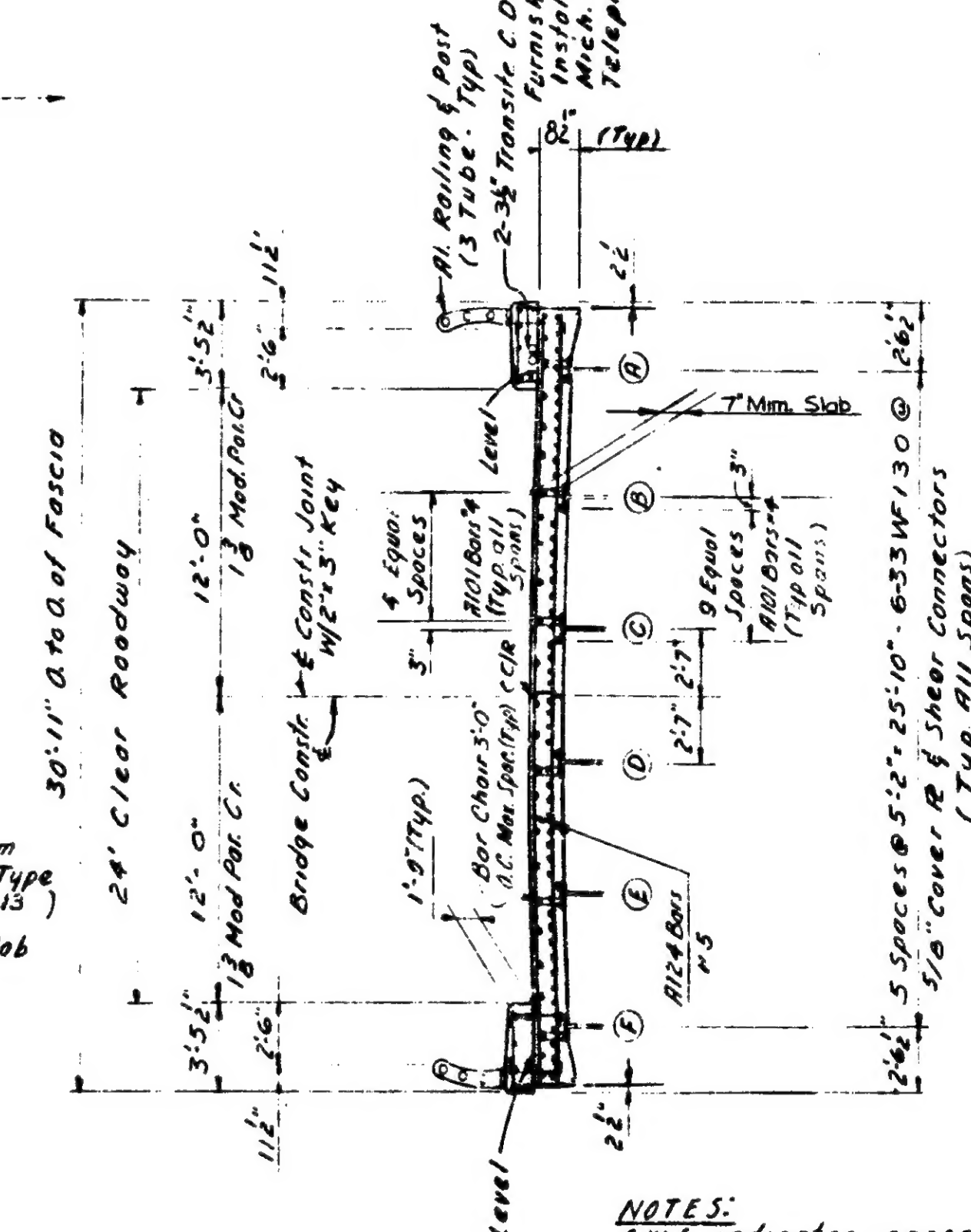
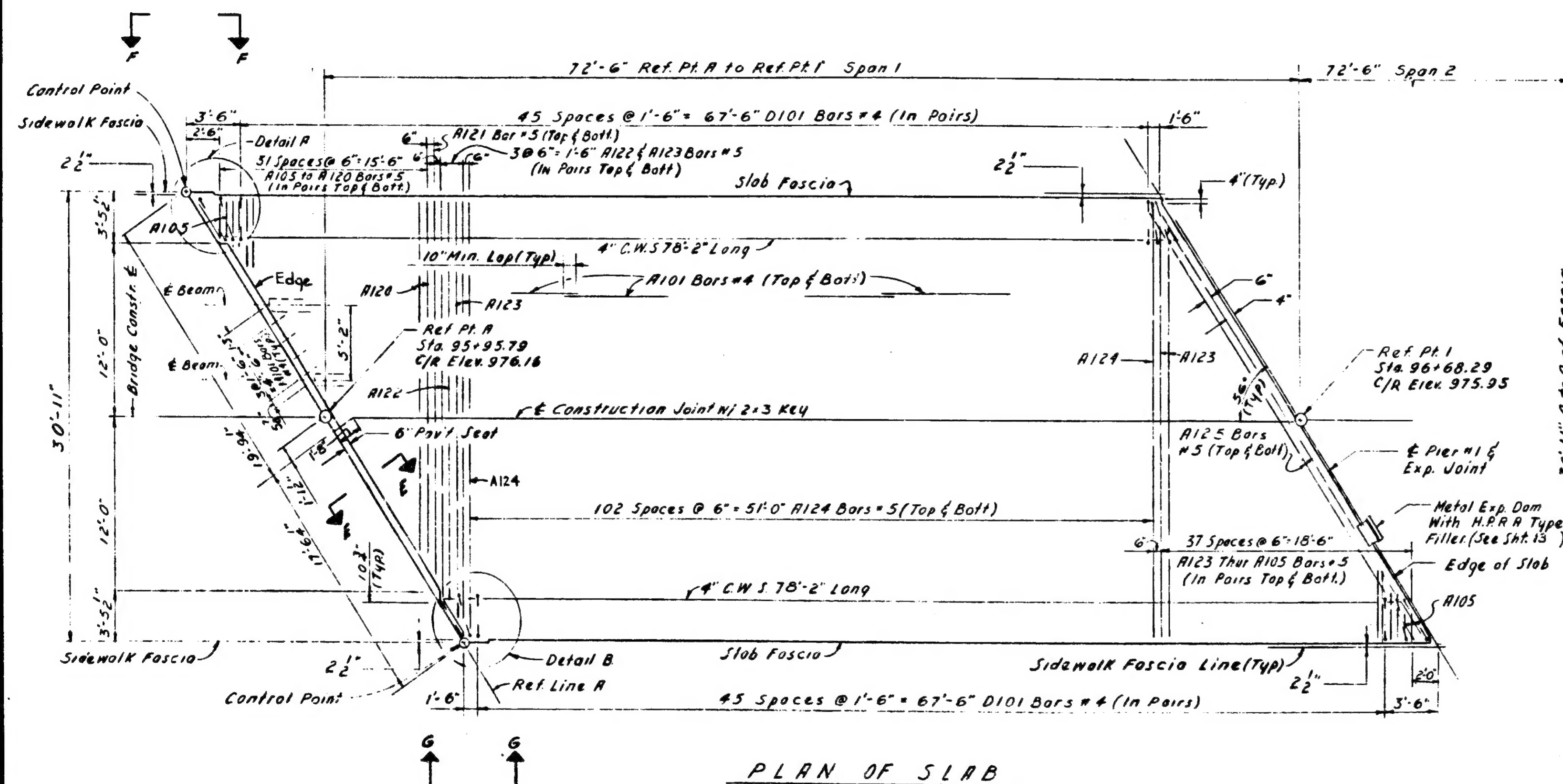
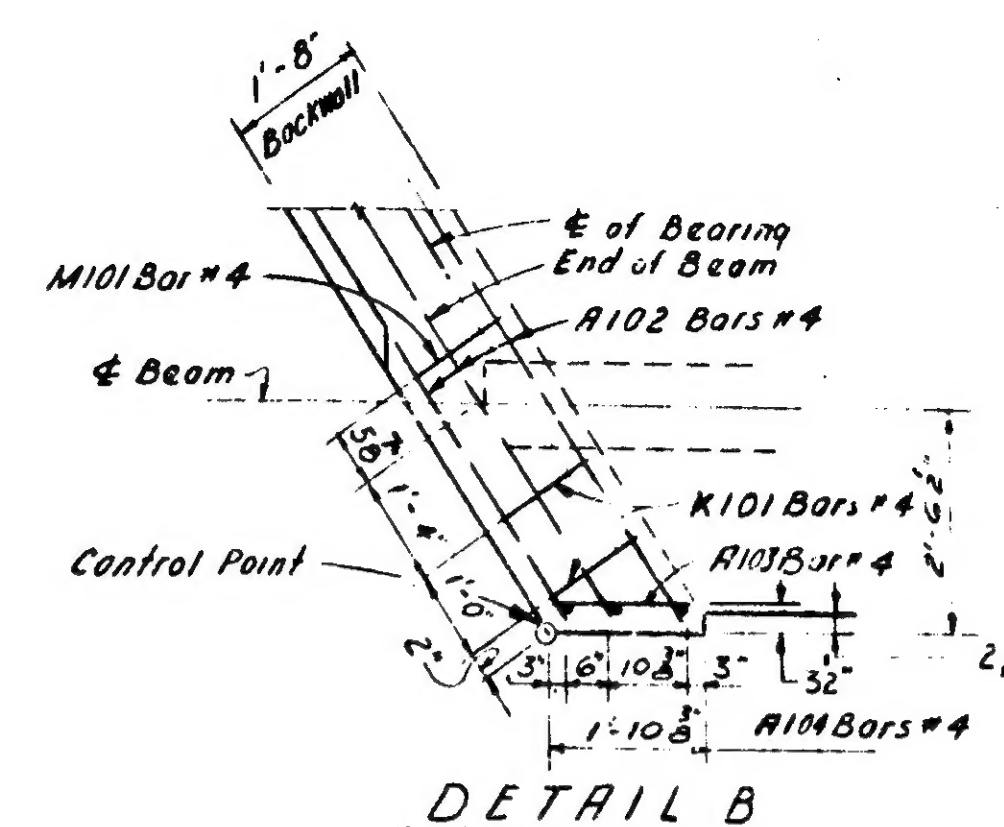
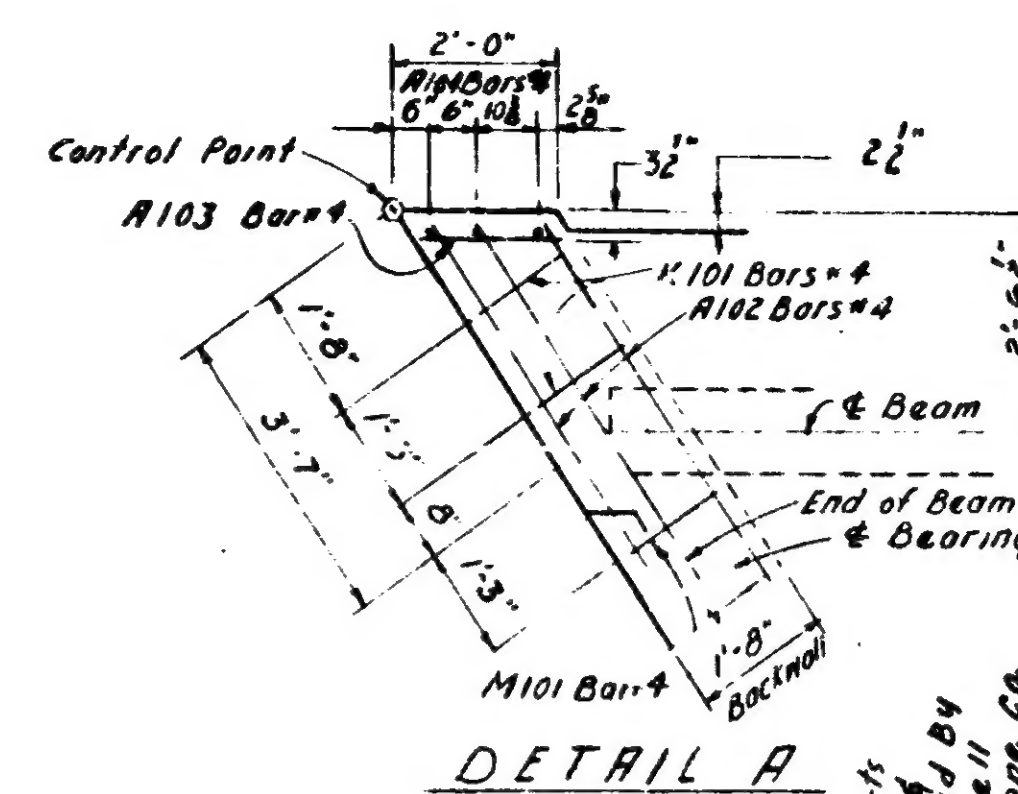
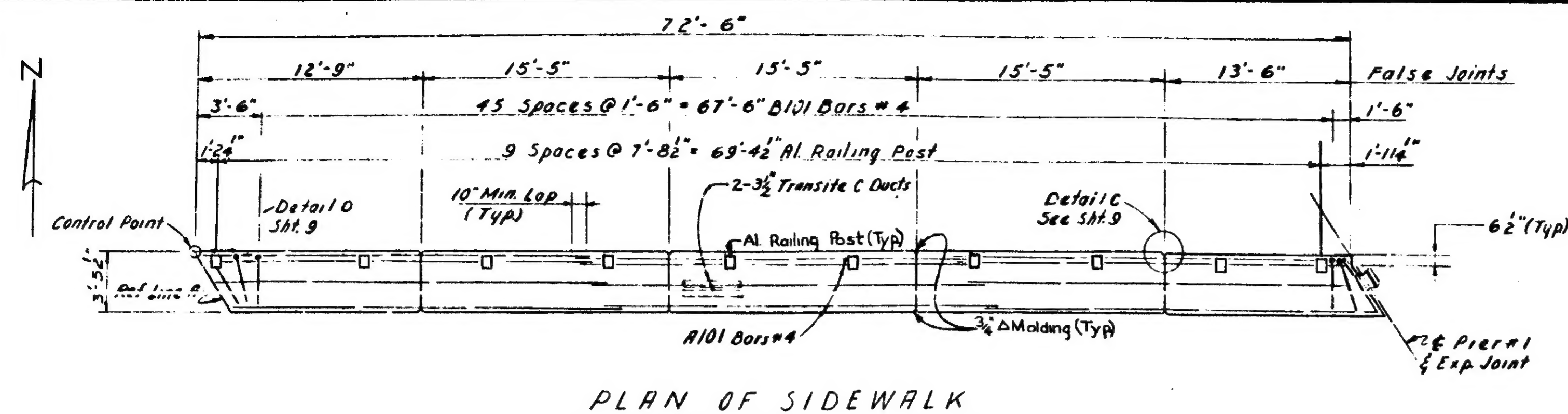
MICHIGAN STATE HIGHWAY DEPARTMENT

PIER DETAILS

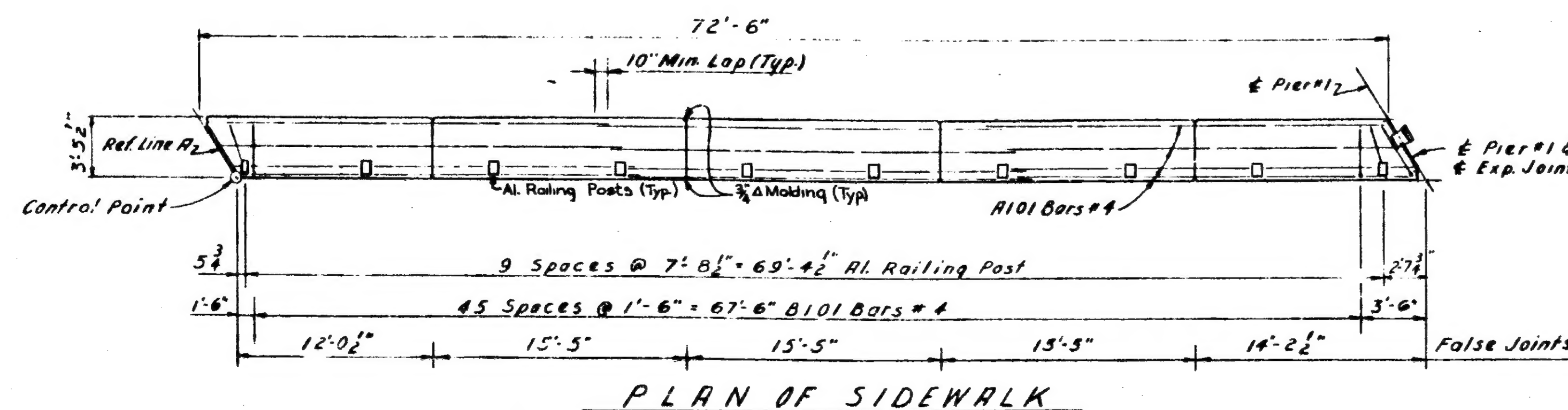
REVISIONS			
NO.	DESCRIPTION	DATE	BY

SQUAD BOSS	RUSSELL	11-19-6
DRAWN BY	F.O.C.	10-27
TRACTED BY		
CHECKED BY	F.O.C.	11-16-6

B2 OF 16-5-6



NOTES:
C.W.S. indicates copper waterstop
J.W.R. indicates joint waterstop
For Bevel & Molding Detail See Sheet No. R10
Edge and Groove denote Edging or Grooving with an
approved tool
Sidewalk pours shall not be cast until slab concrete
has attained at least 50% of its design strength
as determined by table in Section 3.01.0. of the
Standard Specifications.
R. permanent camber, extending over the entire length
of the bridge with a middle ordinate of 1" shall be
placed in the tops of sidewalk.

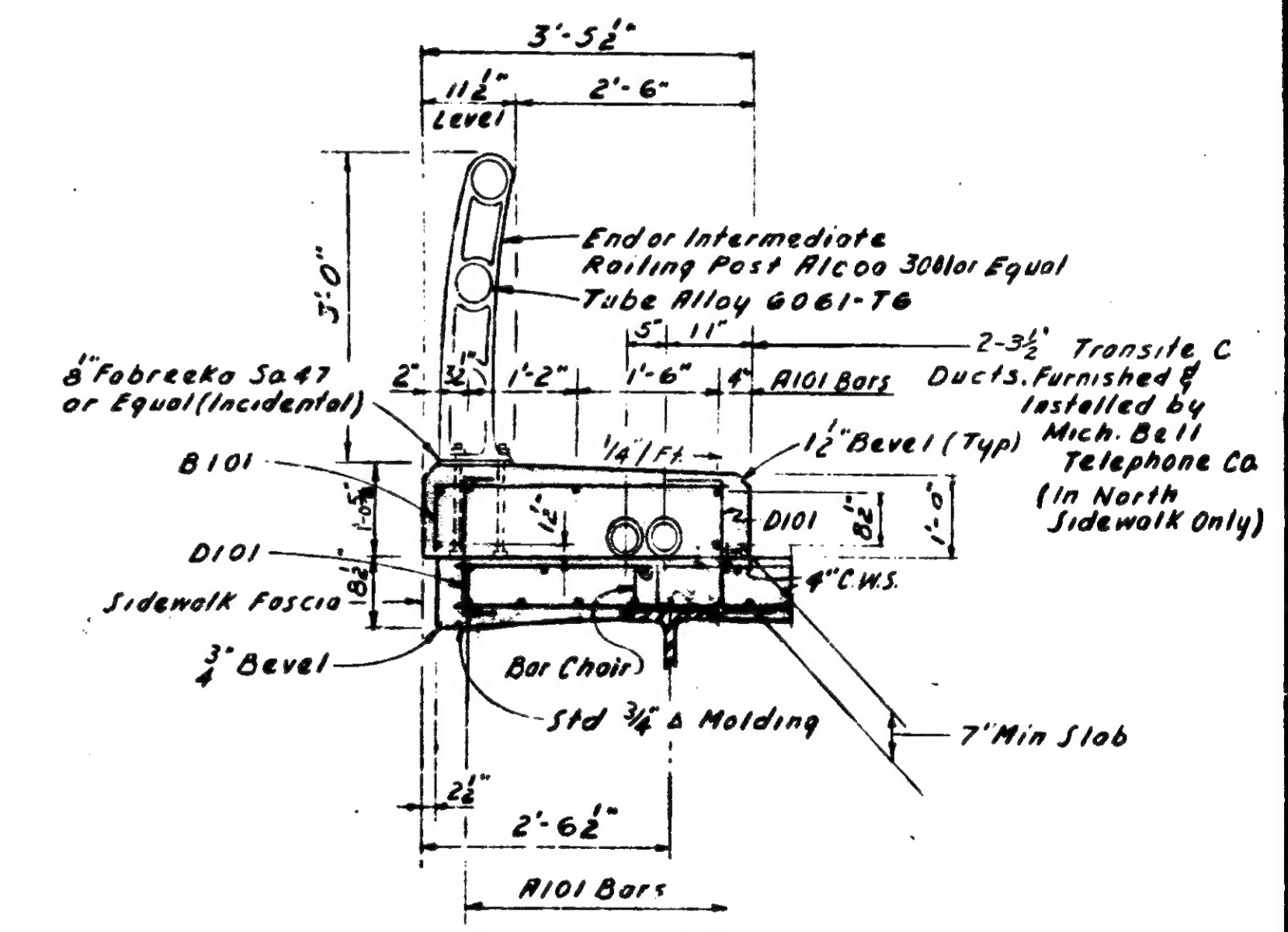
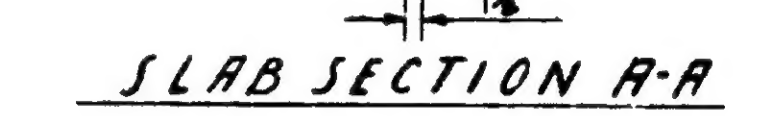
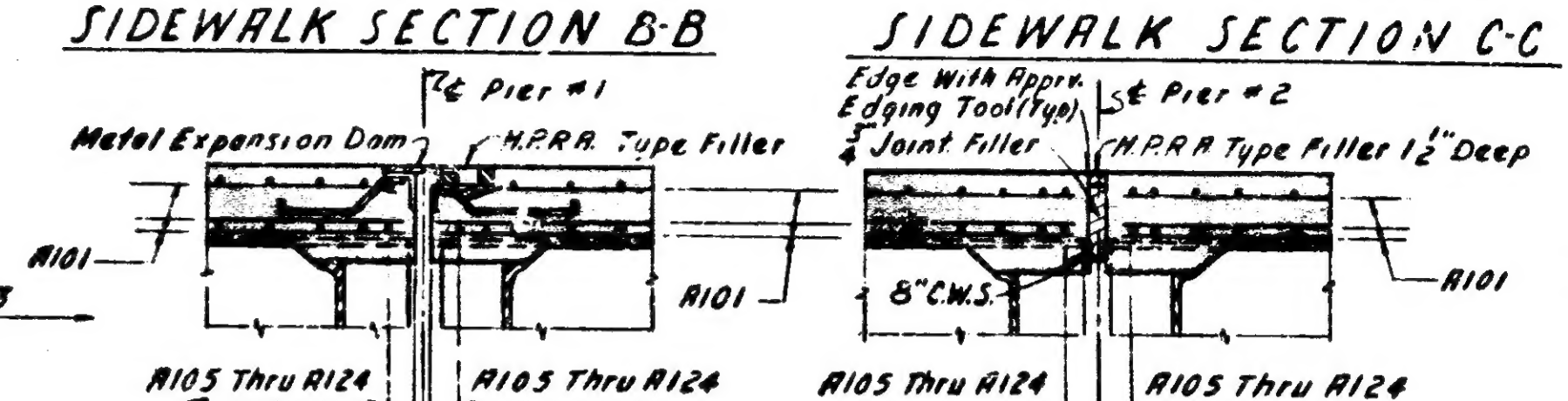
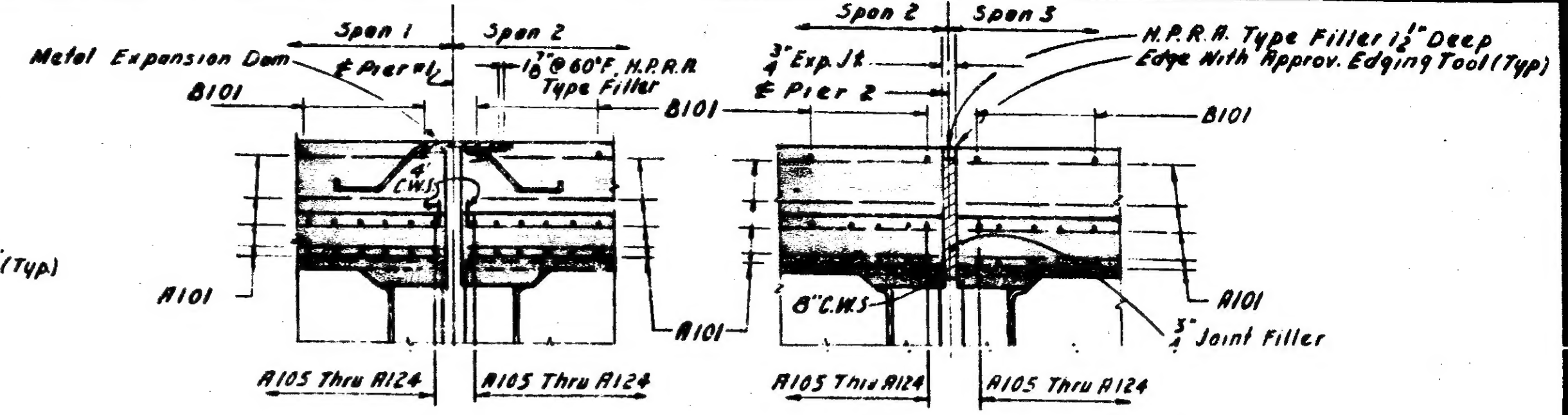
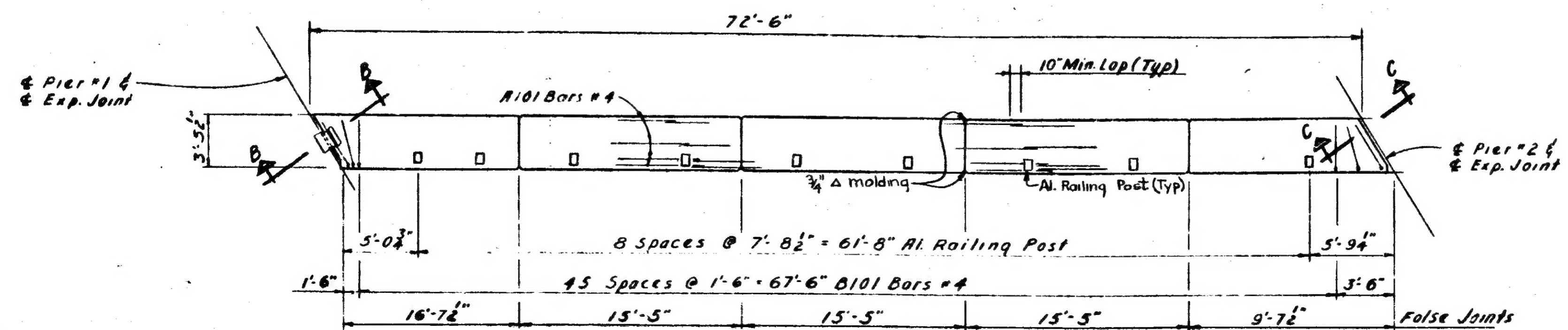
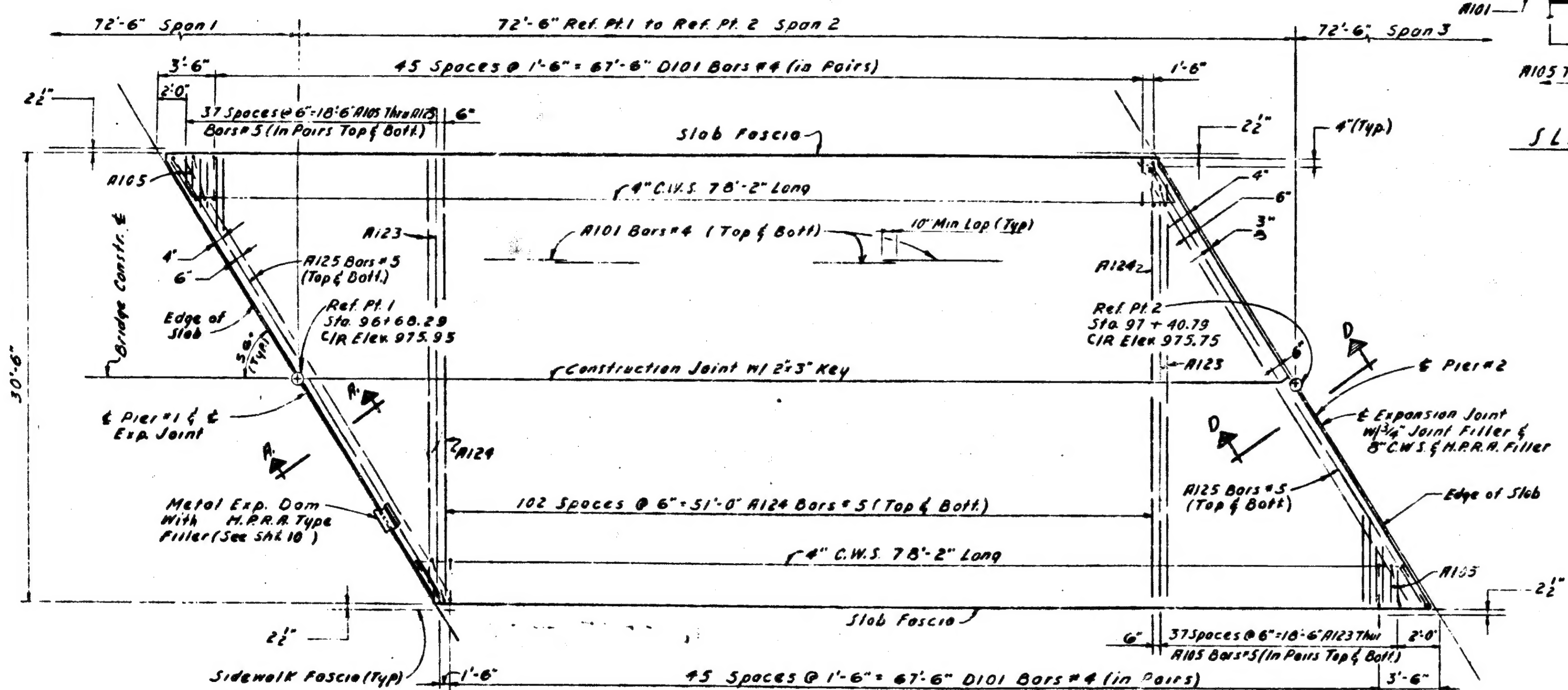
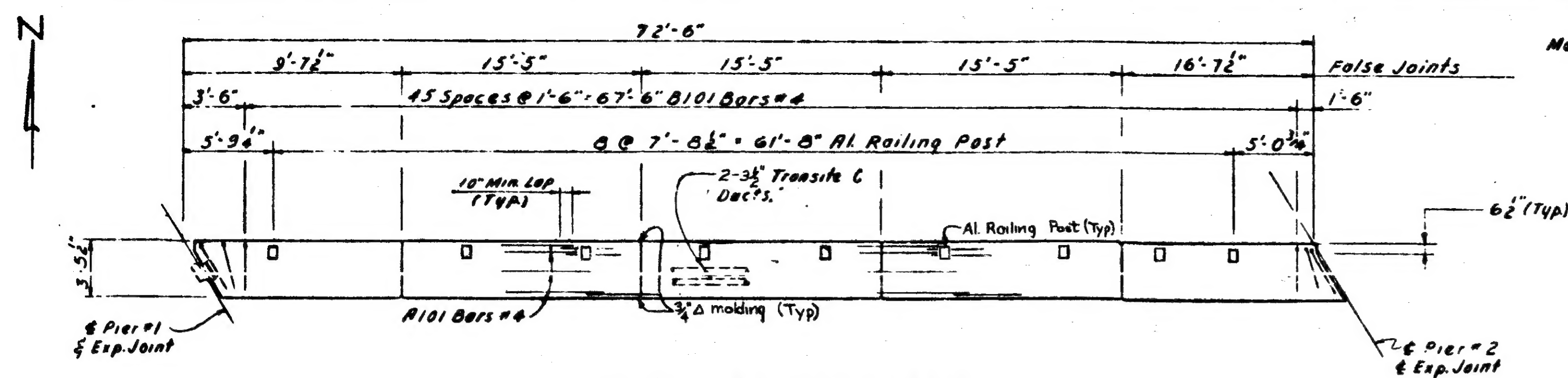


WORK THIS SHEET WITH SHEETS 8, 9 & 10

MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS
SPAN |

REVISIONS			
NO.	DESCRIPTION	DATE	BY

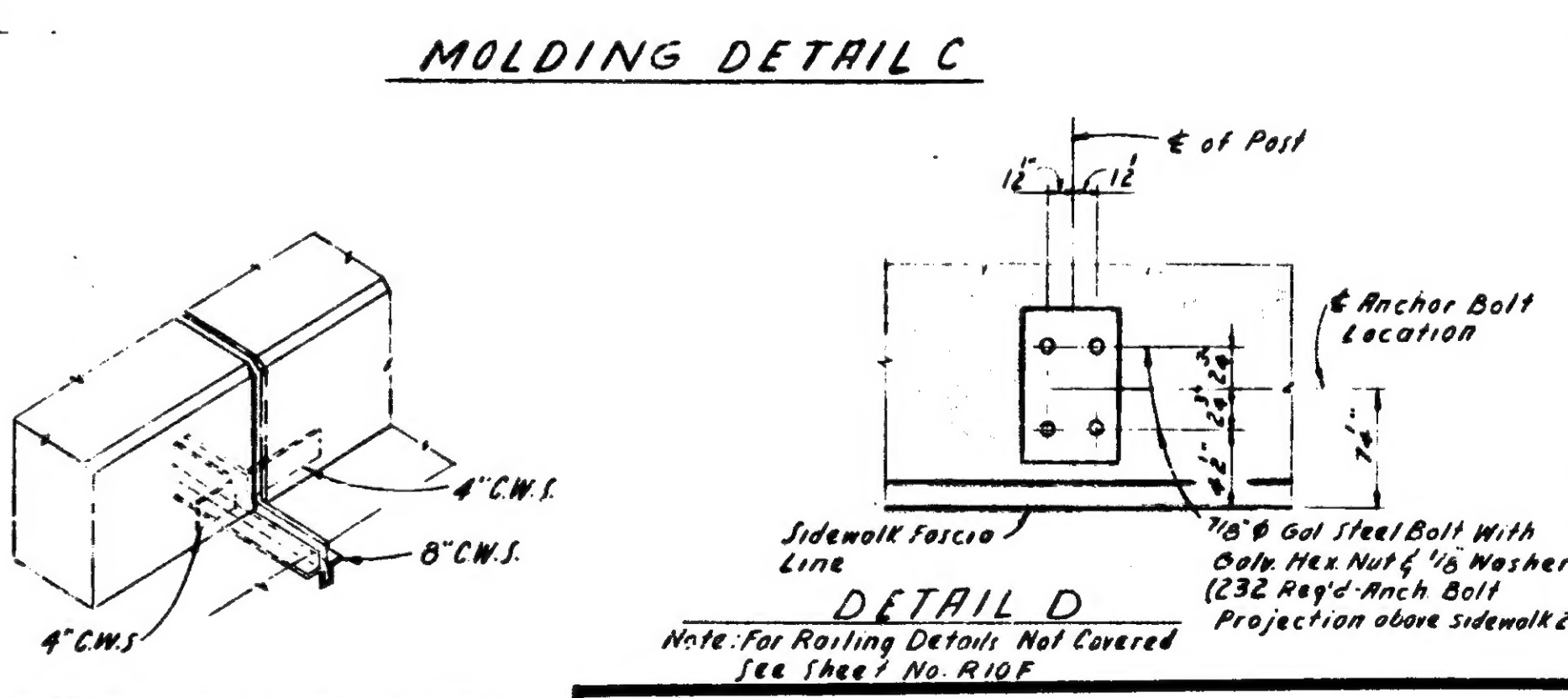
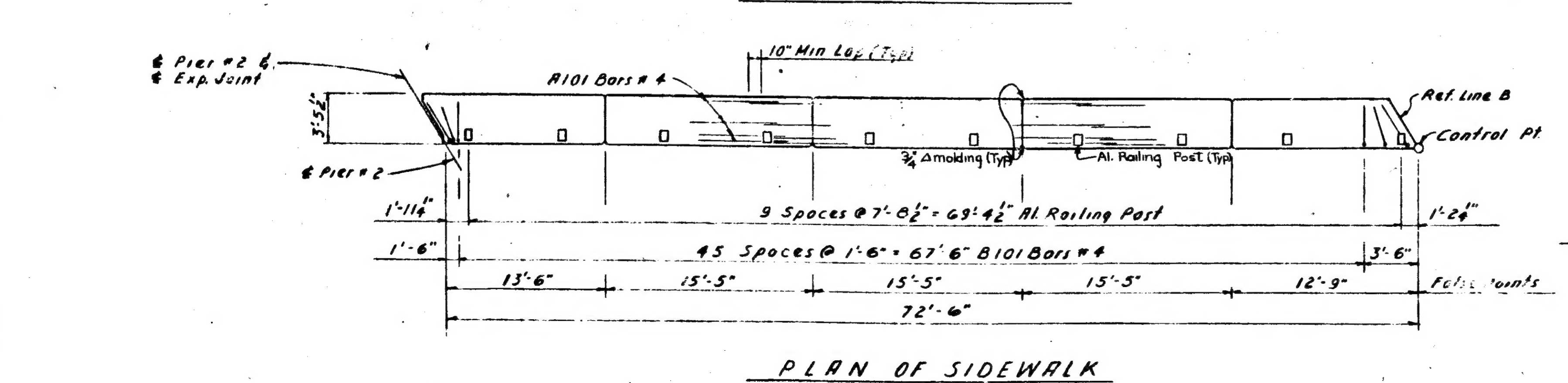
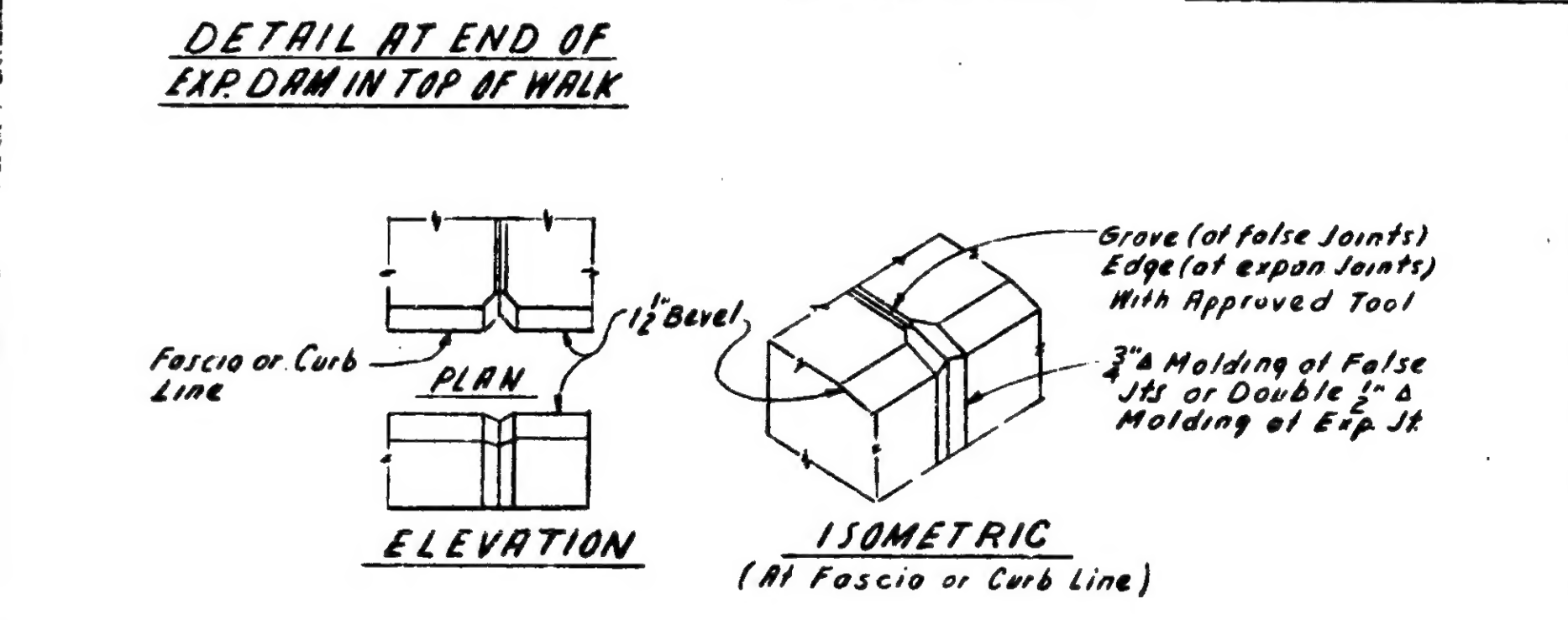
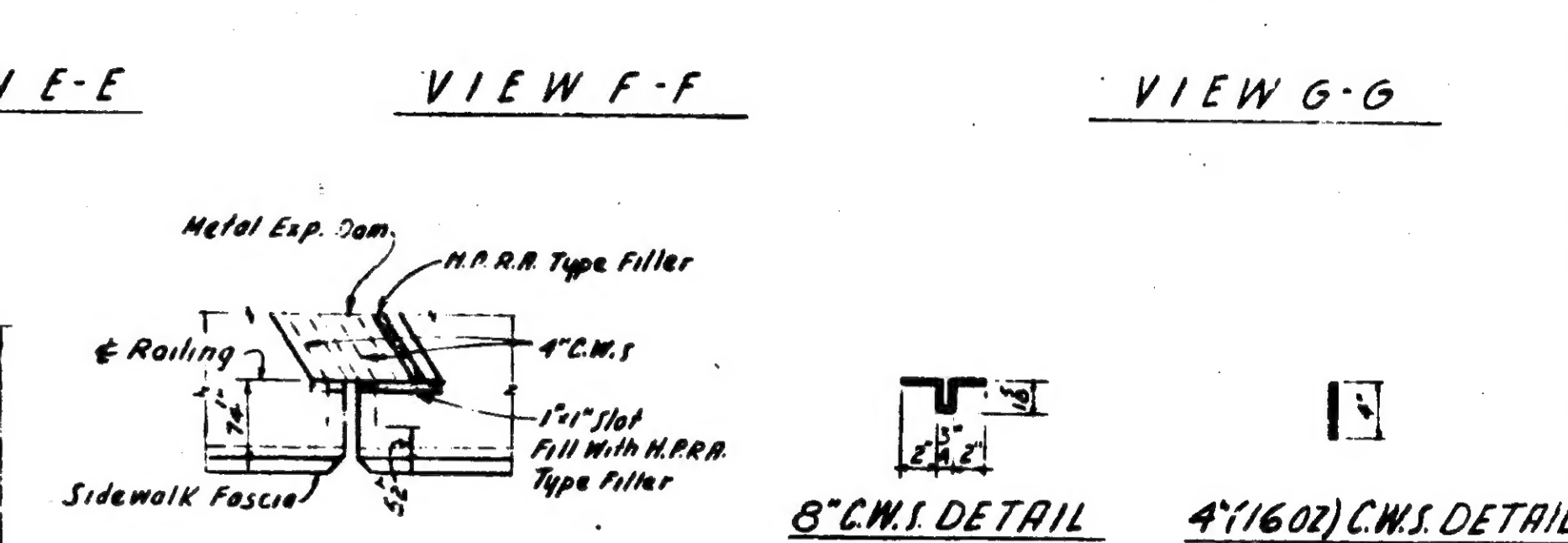
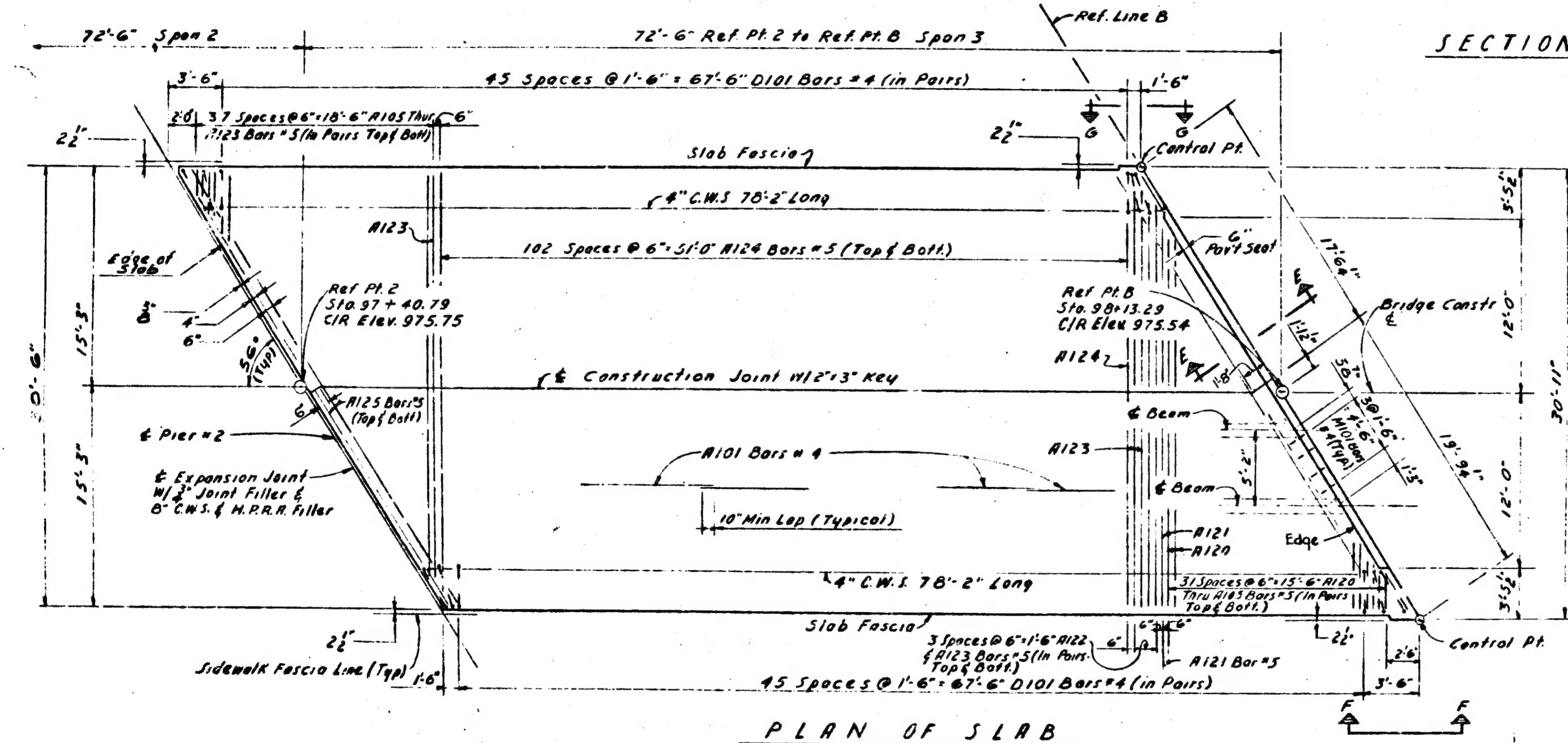
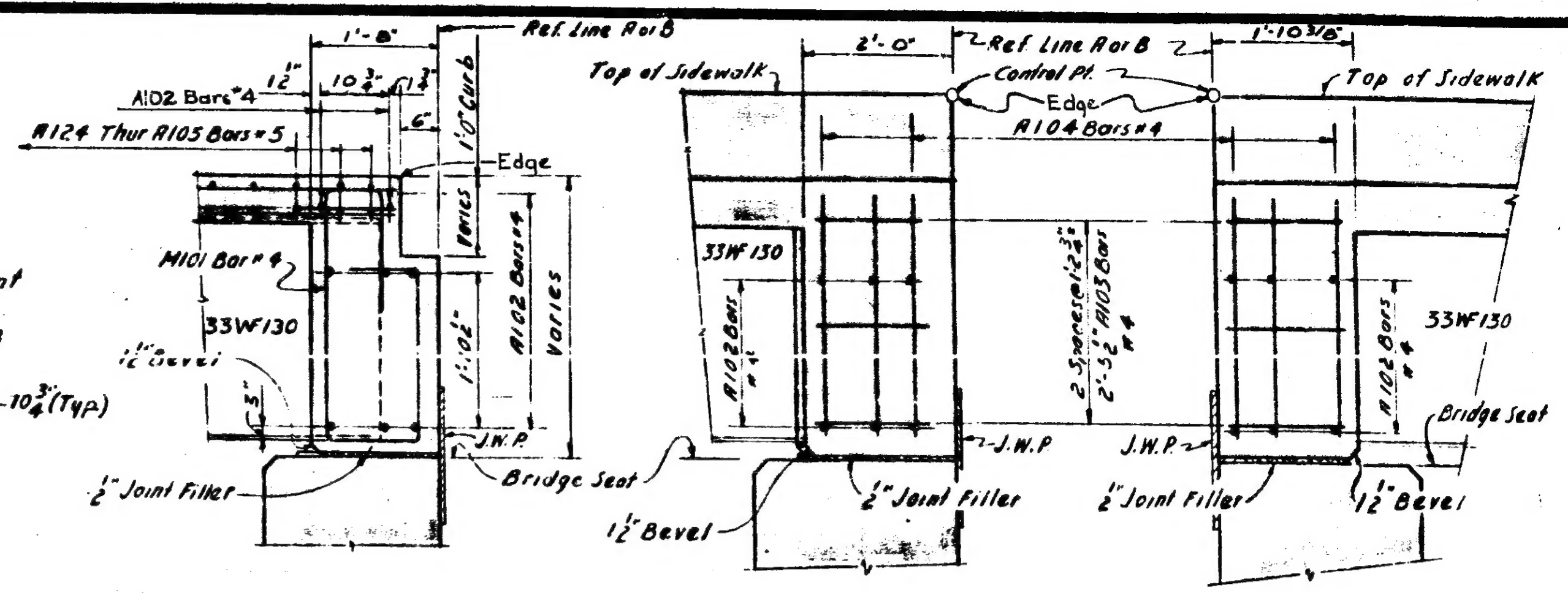
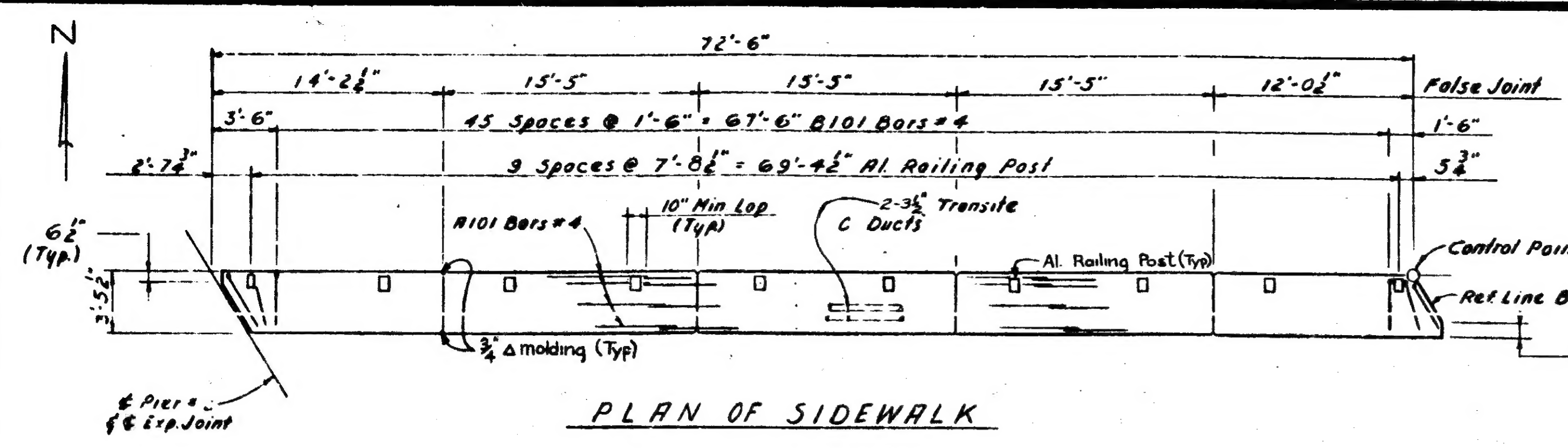
SQUAD BOSS	P. J. Smith	11-19-6
DRAWN BY	Mitchell	10-60
TRACED BY		
CHECKED BY	F. O. C.	11-17-6
SHEET 7 OF 14		
B2 of 16-5-6		



WORK THIS SHEET WITH SHEETS 7, 9 & 10

MICHIGAN STATE HIGHWAY DEPARTMENT SUPERSTRUCTURE DETAILS SPAN 2			
REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	AS SHOWN	11-19-60	Michell
2	CHANGED BY	10-60	Michell
3	CHECKED BY	10-60	Michell
4	DATE	10-60	Michell

B2 of 16-5-6

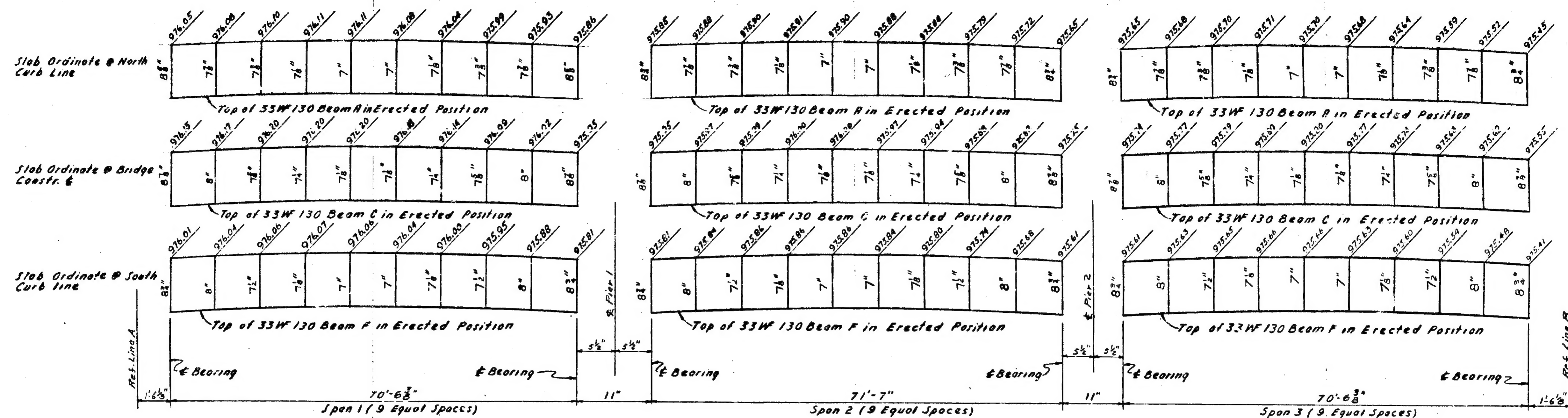


**MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS
SPAN 3**

NO.	REVISIONS	DATE	BY
1	Revised	11-19-60	Russman
2	Revised	10-60	Mitchell
3	Revised	11-17-60	E.C.C.
4	Revised	11-17-60	E.C.C.

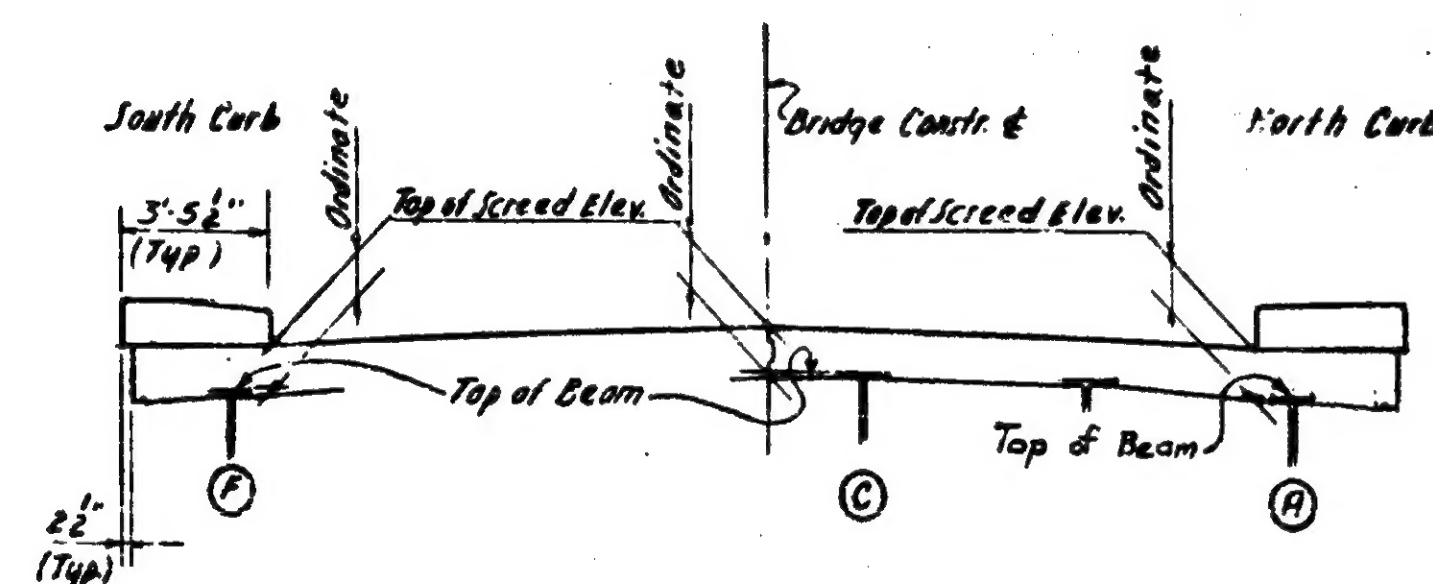
B 2 of 16-5-6

WORK THIS SHEET WITH SHEETS 10 & 11



SLAB ORDINATE DIAGRAM

NOTE: The slab ordinates shown provide for dead load deflection, crown and beam camber, and are to be measured from the top of the screed. Elevations shown are for top of screed before pouring any concrete, and are based on a minimum slab thickness of 7". After screeds are set, if check indicates that less than the minimum thickness will be obtained, adjust screeds and expansion dams accordingly.



SECTION THROUGH DECK SHOWING LOCATION OF SCREED ELEVATIONS

MISCELLANEOUS QUANTITIES		
ITEM	UNIT	AMOUNT
Alum. Br. Rolling-Fab. & Erect. (3 Tube)	Lin Ft.	435
Hot Poured Rubber Asphalt Type Filler	Lin Ft.	74
3/4" Joint Filler	Sq. Ft.	28
Copper Water Stop	Lbs	180

CONCRETE QUANTITIES GRADE #66				
LOCATION OF POUR	SPAN			TOTAL CU. YDS
	1	2	3	
North Sidewalk	9.3	9.8	9.3	28.4
North Rdwy Slab	30.0	26.8	29.5	86.3
South Rdwy Slab	29.5	26.8	30.0	86.3
South Sidewalk	9.8	10.3	9.8	29.9
GRAND TOTAL				230.9

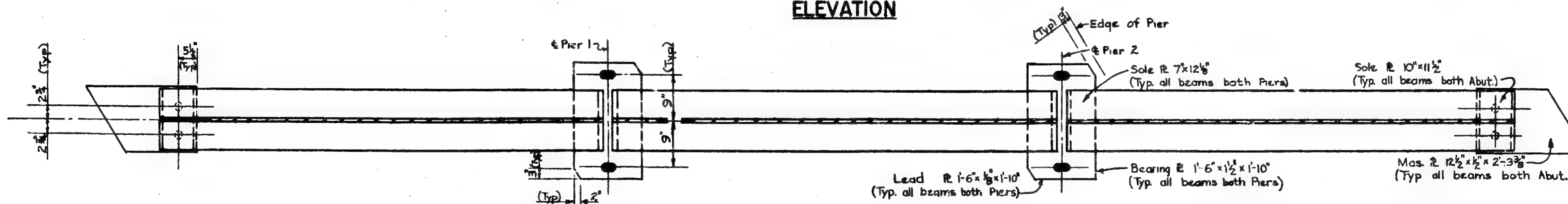
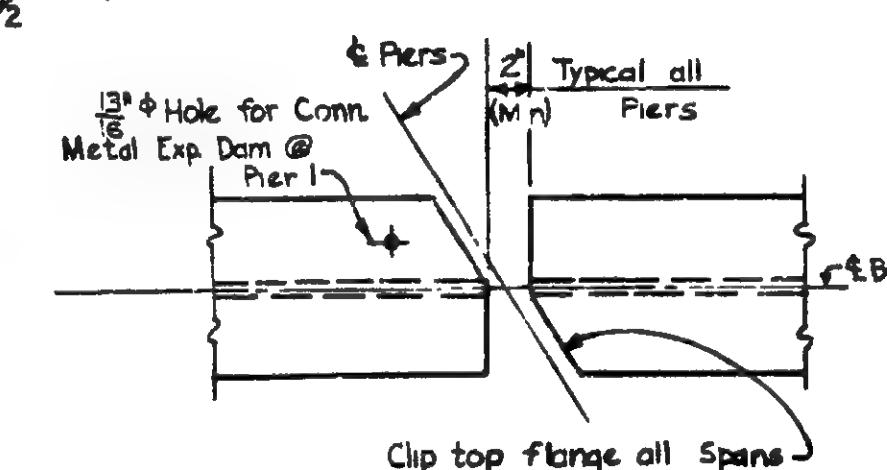
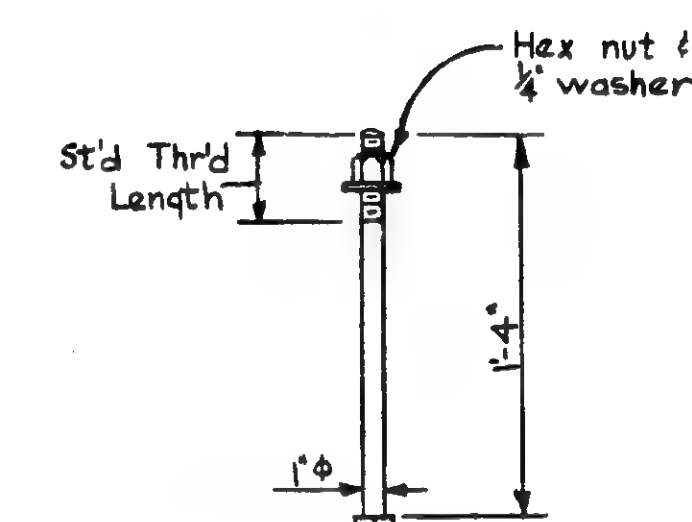
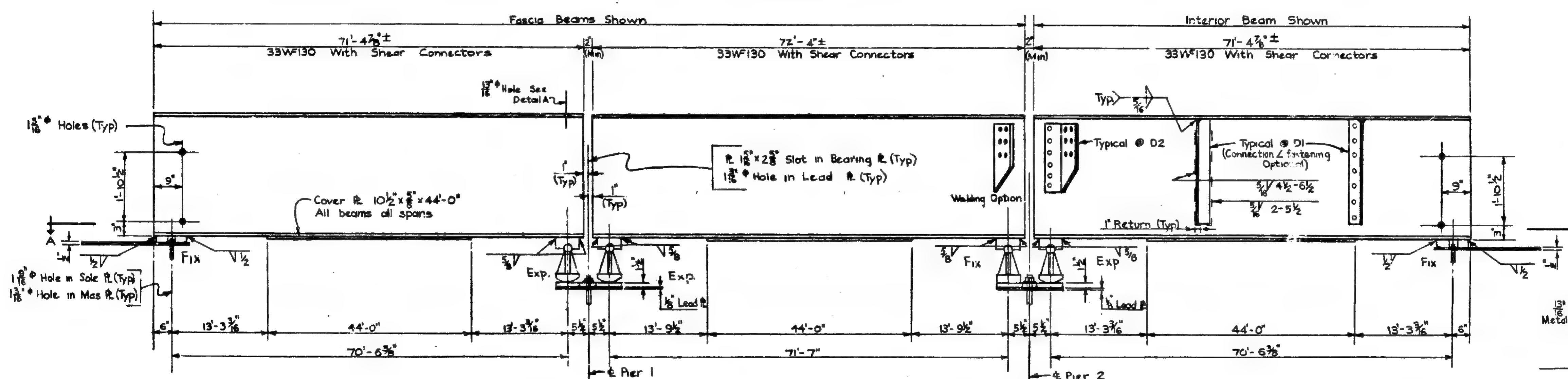
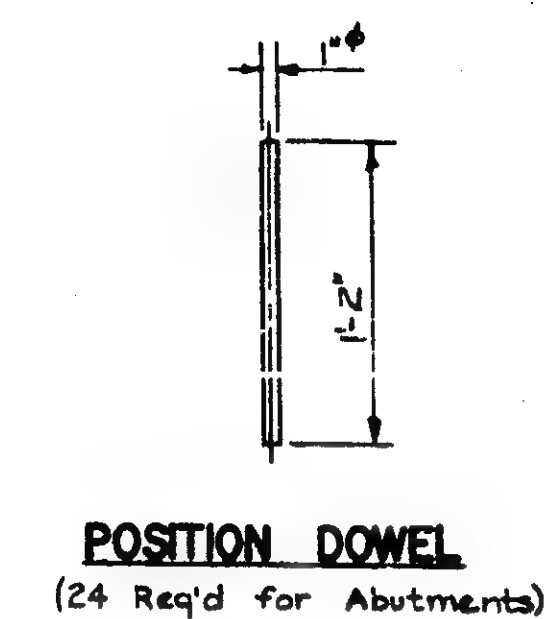
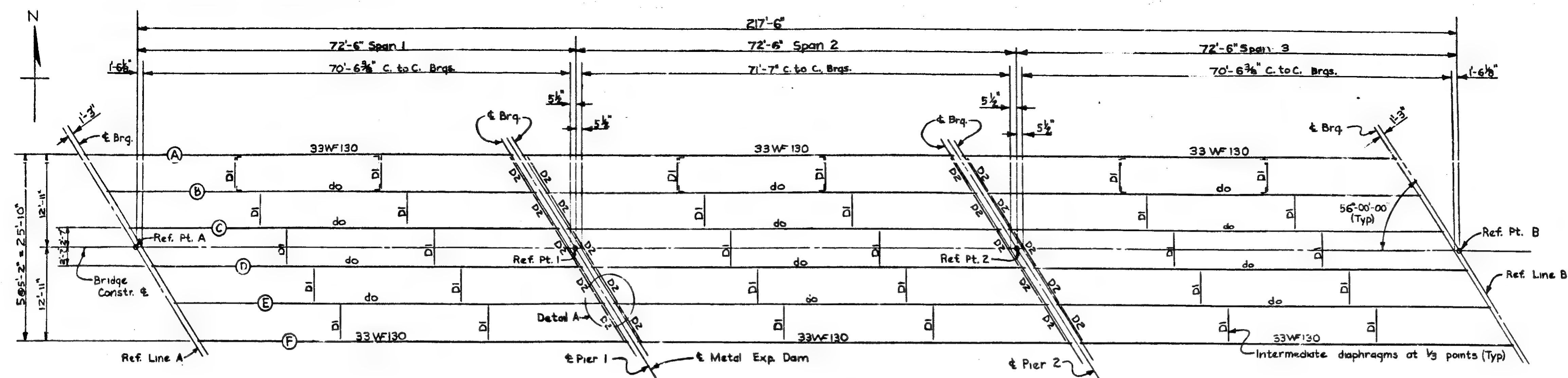
WORK THIS SHEET WITH SHEETS 7.0, 6.9

MICHIGAN STATE HIGHWAY DEPARTMENT
SUPERSTRUCTURE DETAILS

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DESIGNED BY	Prismen 11-19-60
DRAWN BY	McNeill 10-60
CHECKED BY	F.O.C. 11-17-60
DATE	10-14

B2 of 16-5



Note:

See Table on Sheet 12 for Sole & Thickness.

Work this sheet with sheets 12 & 13

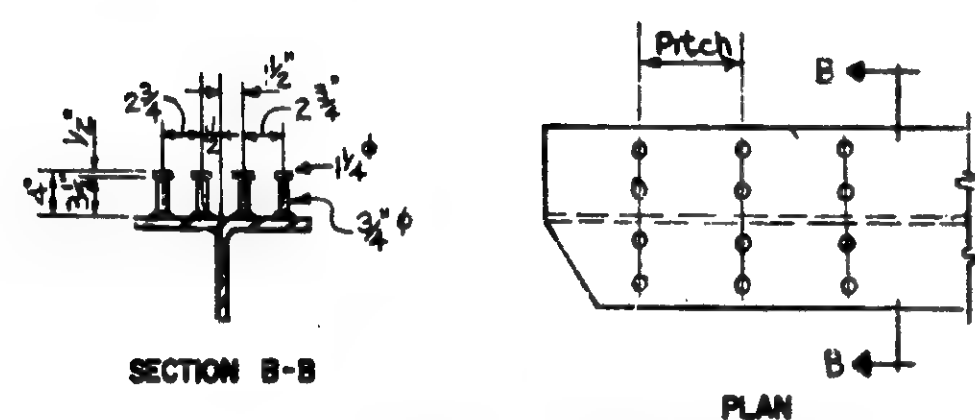
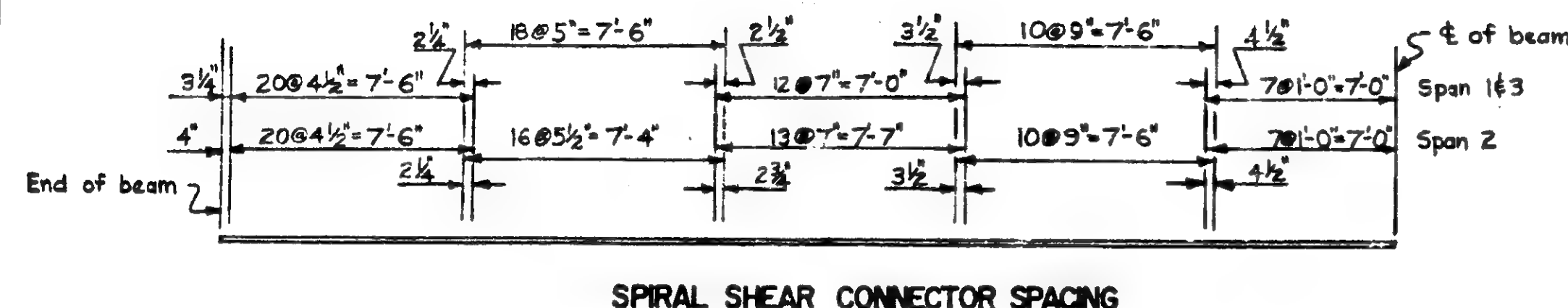
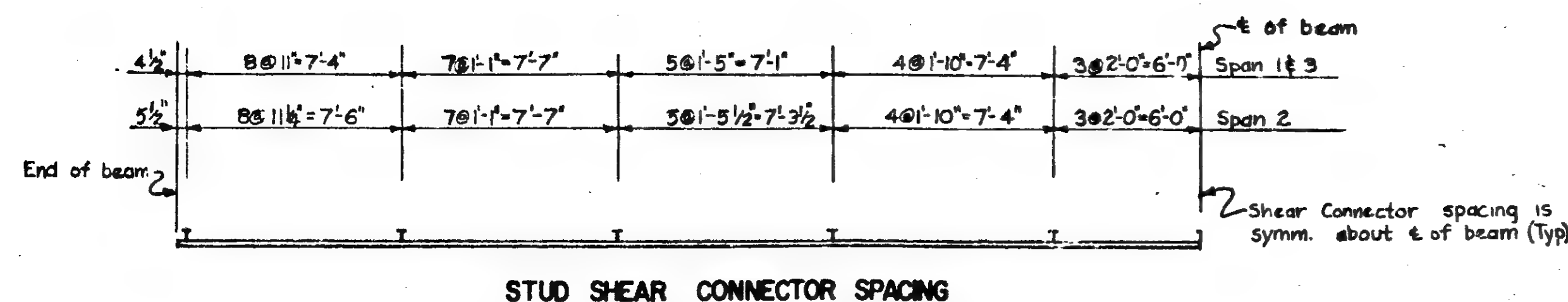
MICHIGAN STATE HIGHWAY DEPARTMENT

STRUCTURAL STEEL DETAILS

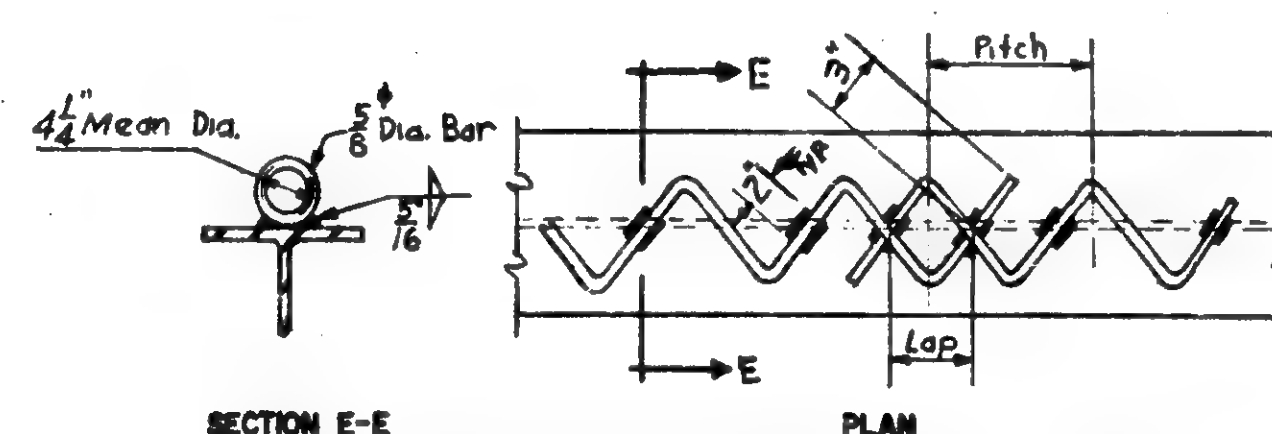
REVISIONS			
NO.	DESCRIPTION	DATE	BY

SQUAD ROSE	Russman	11-19-6
DRAWN BY	F.O.C.	10-21-
TRACED BY		
CHECKED BY	F.O.W	11--6
SHEET 11 OF 14		

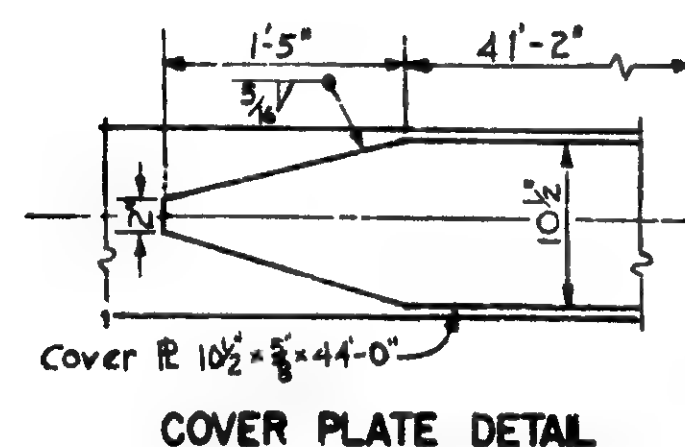
B2 OF 16-5-6



STUD SHEAR CONNECTOR DETAILS

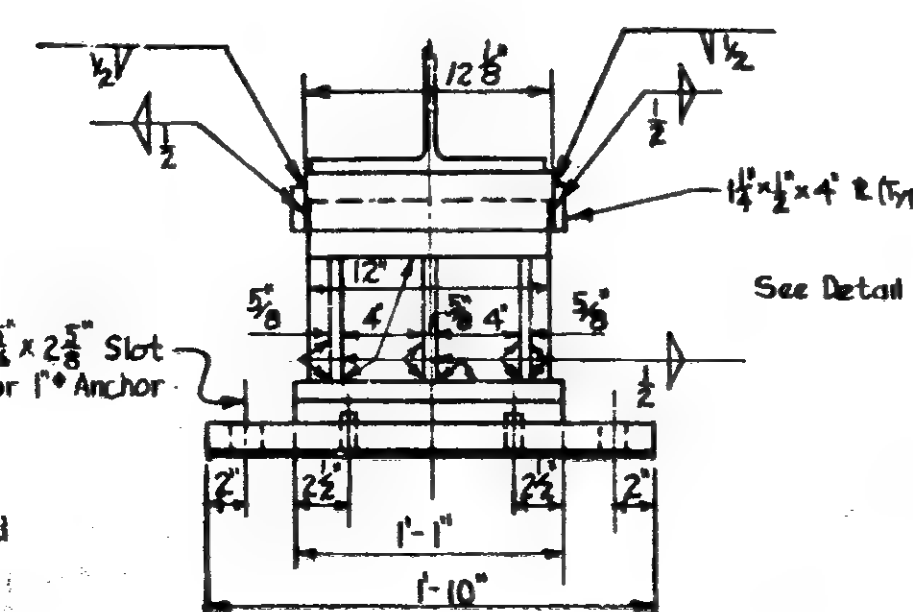
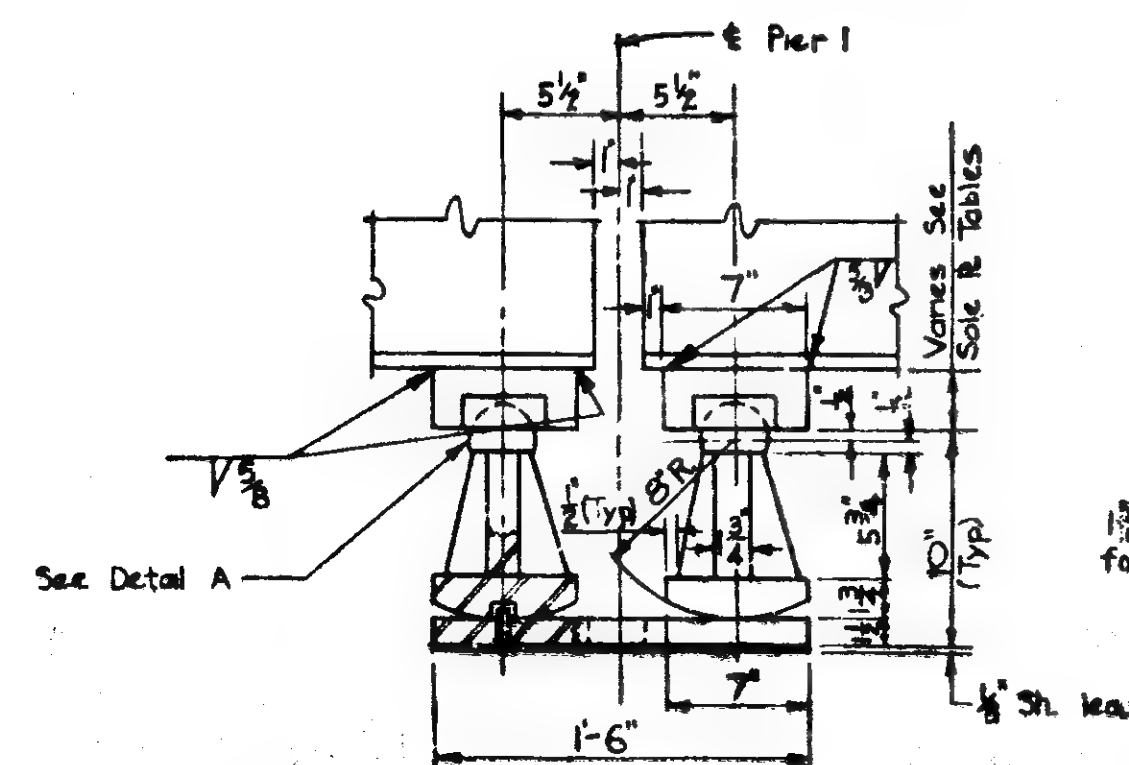


SPIRAL SHEAR CONNECTOR DETAILS

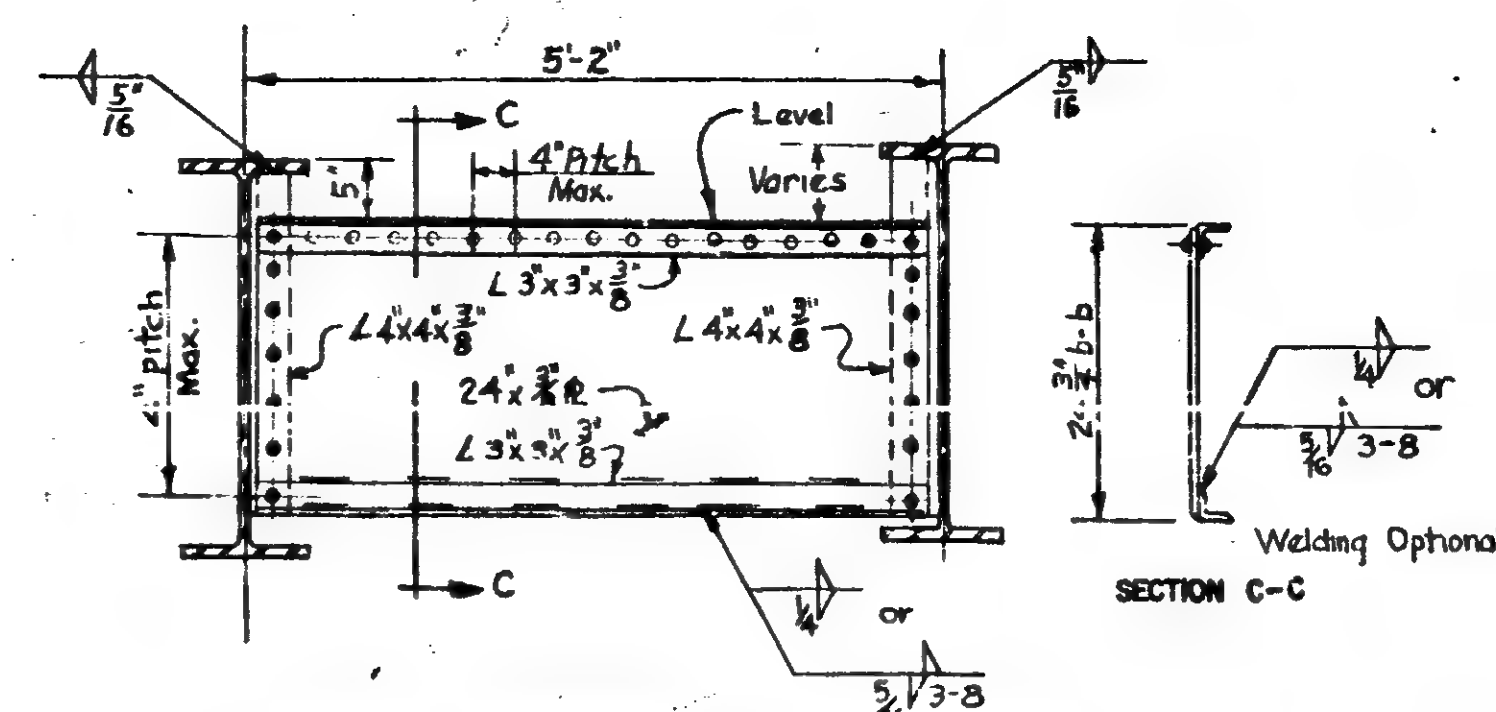


Span	Wt. Req'd.
1	1320
2	1320
3	1320
Totals	3960

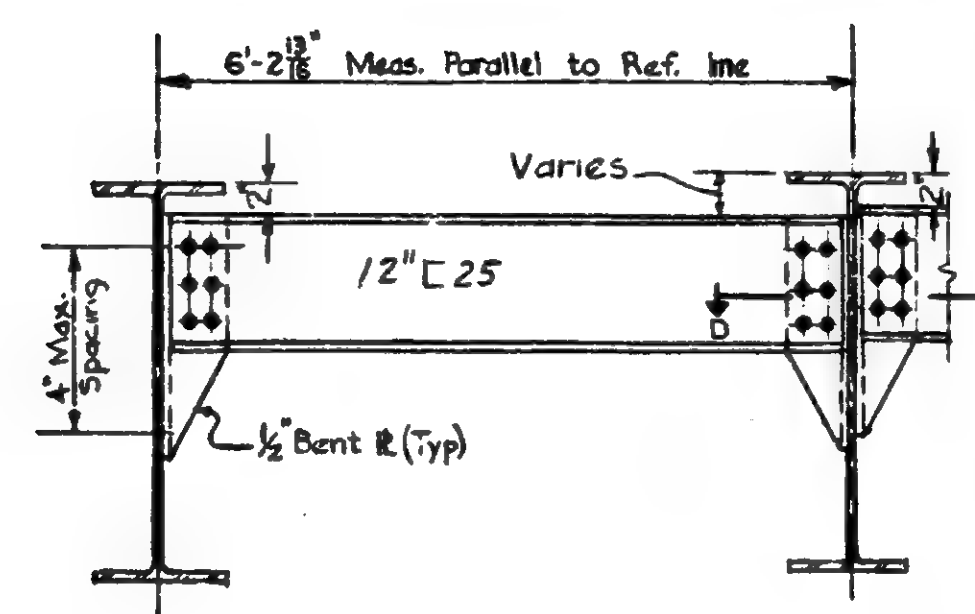
Span	Weight (lb.)
1	1140.0
2	1132.0
3	1140.0
Total	3412.0



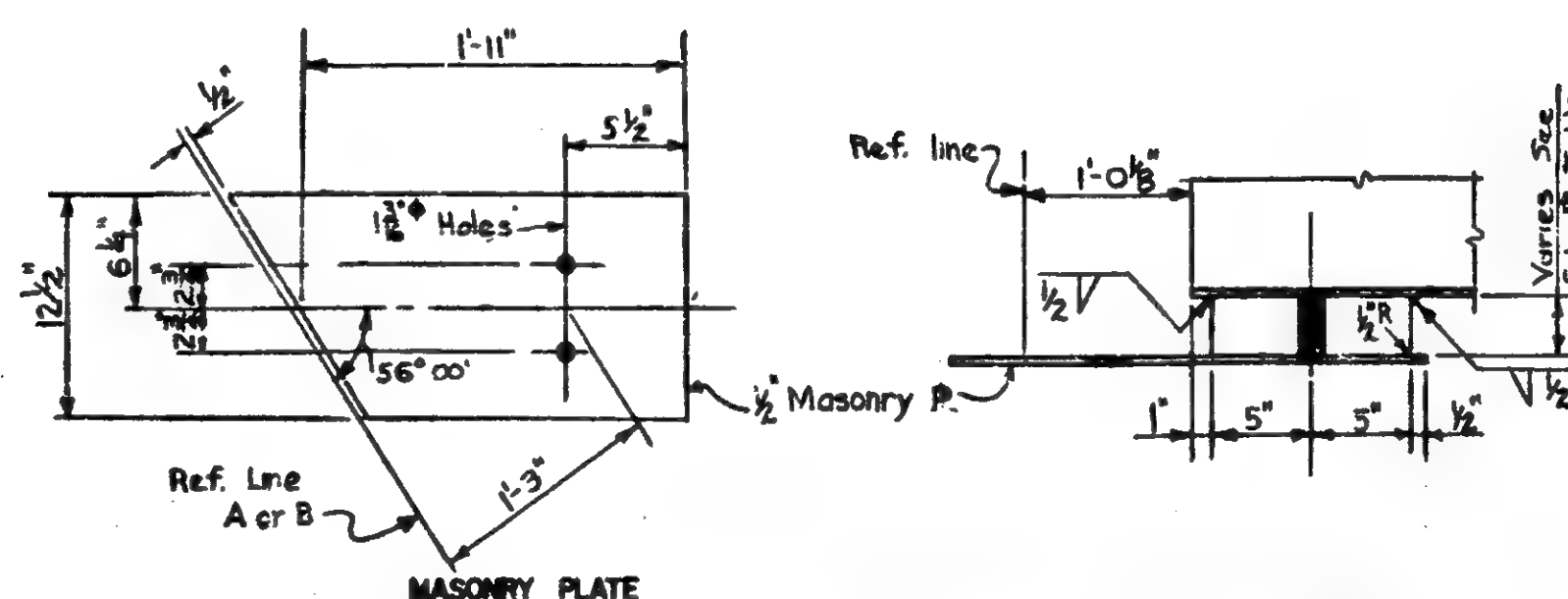
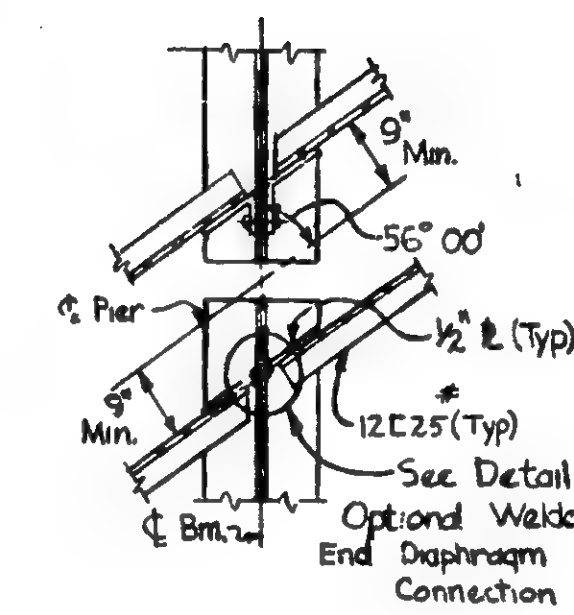
TYPICAL EXPANSION & FIXED BEARING AT PIER 2



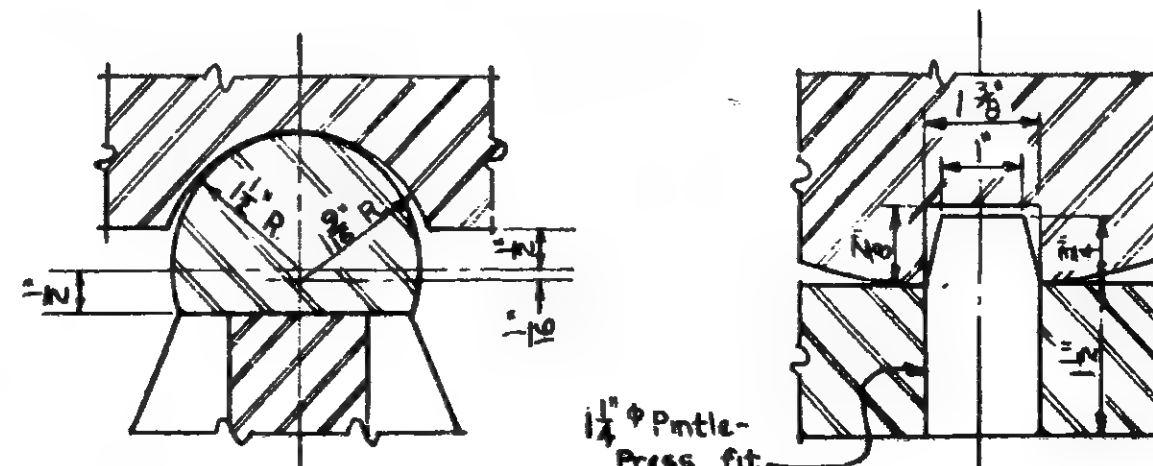
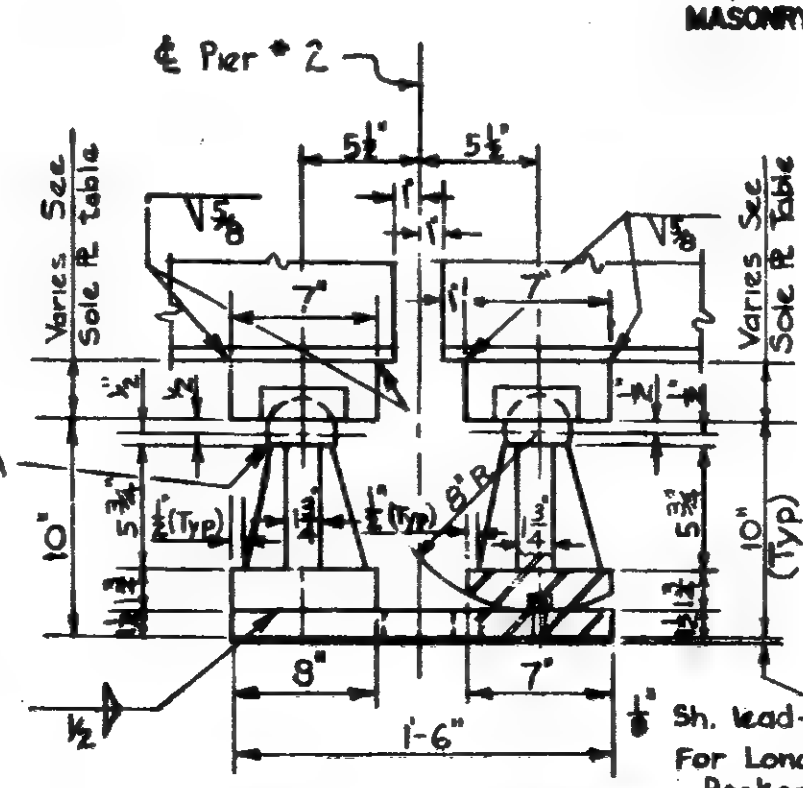
TYPICAL INTERMEDIATE DIAPHRAGM (D1)



TYPICAL END DIAPHRAGM (D2)



TYPICAL BEARING AT ABUTMENTS



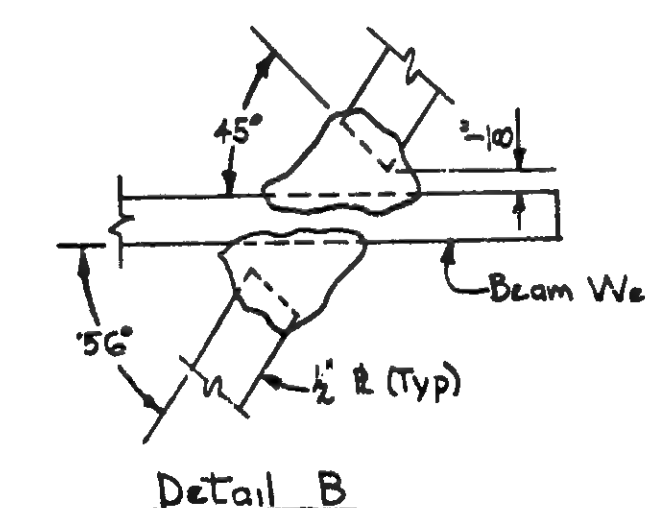
DETAIL A

PINTLE DETAIL

BEAM	Span #1	Span #2	Span #3	Span #4	Span #5	Span #6
A	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
B	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
C	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2
D	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2	3 1/2
E	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2	2 1/2
F	2	2	2	2	2	2

Notes:
Field Connections: Field connections unless otherwise noted shall be bolted with high strength bolts.
Fabrication: Michigan State Highway Department's Standard Specifications for Road & Bridge Construction-1960 Edition.
Design: Michigan State Highway Department's Specifications for the design of Highway Bridges 1958 Edition (H15-44 Loading).
Shop Connections: All shop connections shall be welded or riveted as shown on the plans.
Rivets or High-Strength Bolts: 3/4" Dia.
Open Holes: Open holes for rivets or high-strength bolts shall be 1 1/4" Dia. unless otherwise noted.
Shop Paint: In addition to the shop paint provisions of the Standard Specifications, the top surfaces of masonry plates shall be coated in accordance with requirements for machine finished surfaces.
Metal expansion dam shall not be painted in the shop except as noted on plans.
Camber: Beams in span 1, 2 & 3 shall be given a camber of 3/8" (maximum ordinate) in the mill.

Sole plates: Sole plates 3' or more in thickness may be built up by welding together plates not less than 1/2" in thickness. Edges must be beveled 1/4" and welded, with a continuous weld, for the full perimeter. Welds shall be ground flush with faces of plate.
Field Paint: Field painting shall consist of one complete coat of painting Mixture 2A & one complete coat of painting Mixture 5B.
All beams & cover plates in spans 1, 2 & 3 shall conform to the requirement for welding (A.S.T.M. A-373). All other steel shall be A-7.
The Quantity Structural Steel-Fabrication and Erection Include:
A7 Steel 23,380 lbs
A373 Steel 185,486 lbs
Lead Plates 234 lbs
Total 209,100 lbs Structural Steel-Fab & Erection.
Field painting Lump Sum
Shear Connectors Lump Sum



Work This sheet with sheets 11 & 13

MICHIGAN STATE HIGHWAY DEPARTMENT

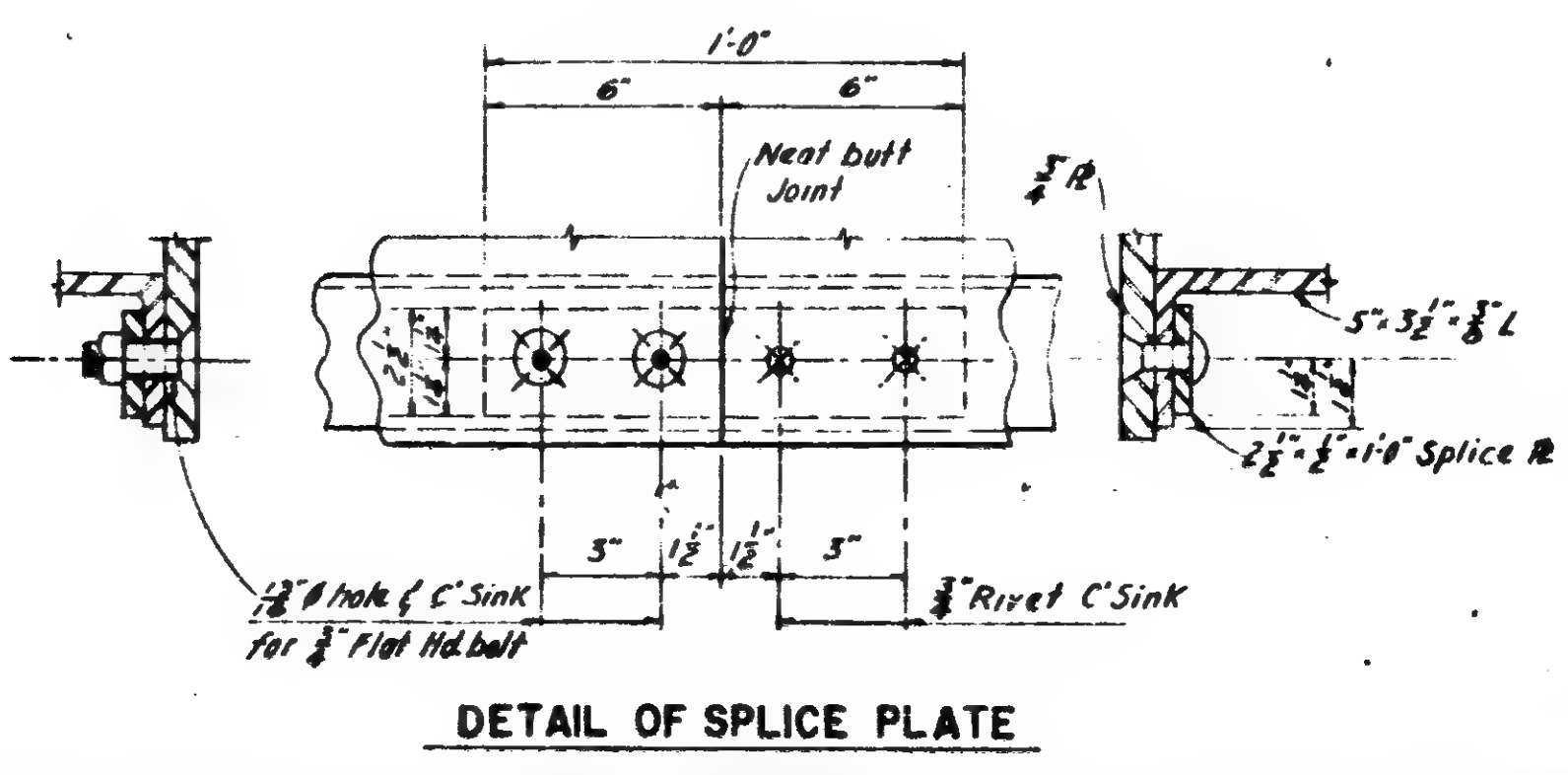
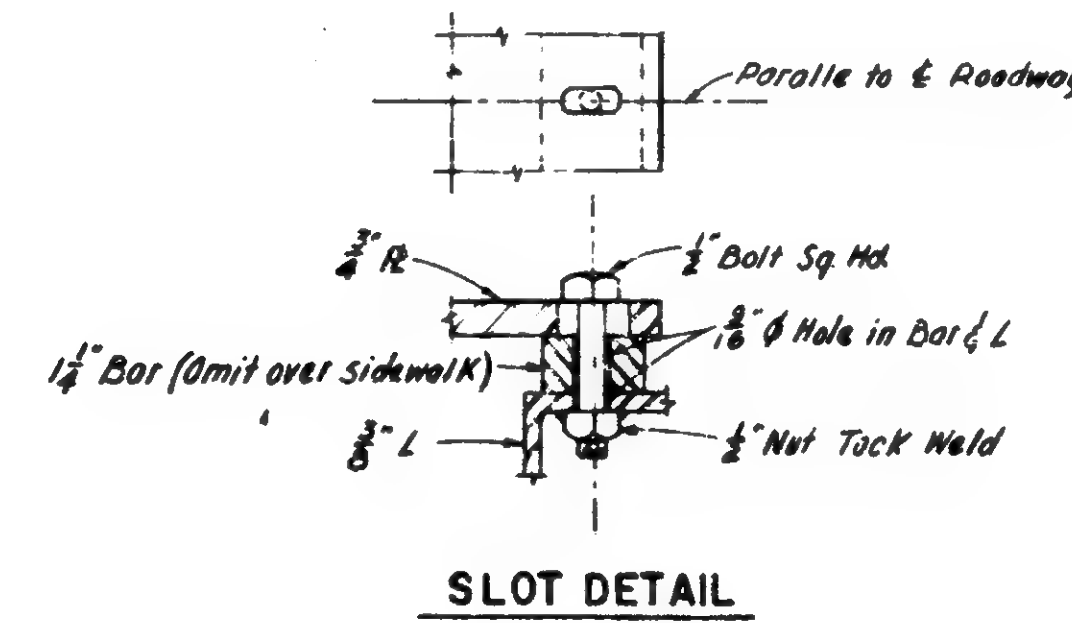
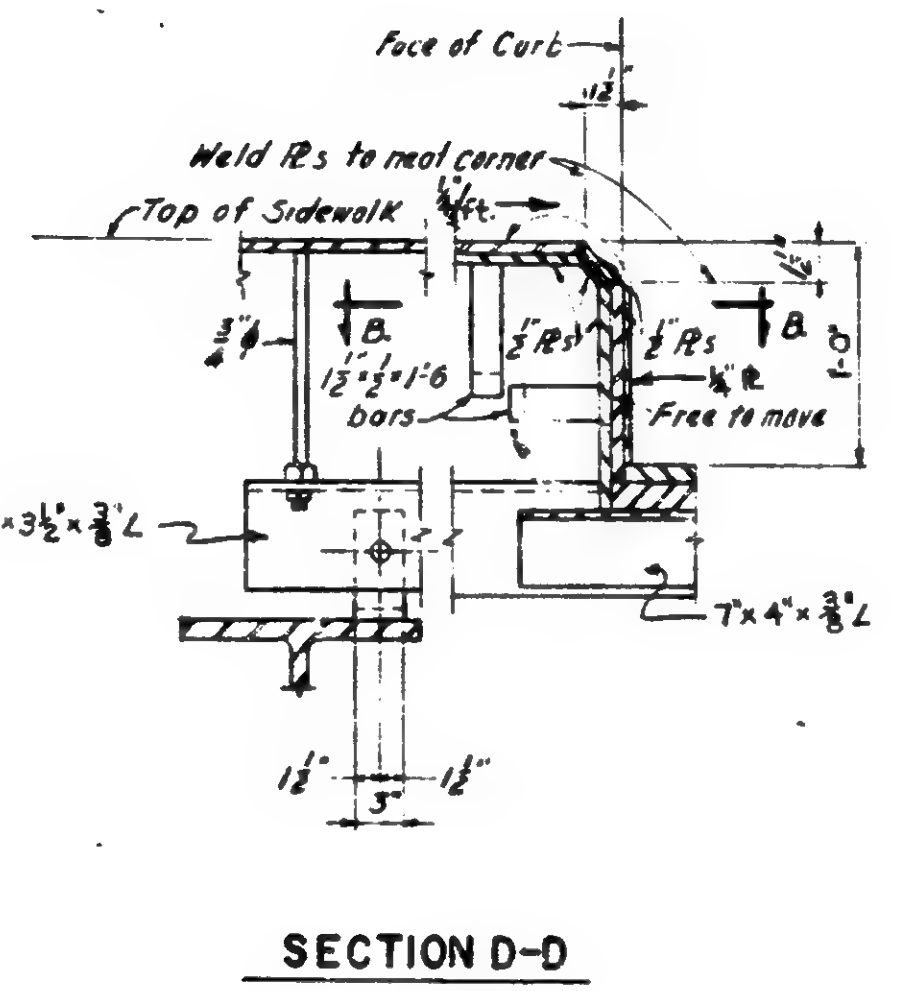
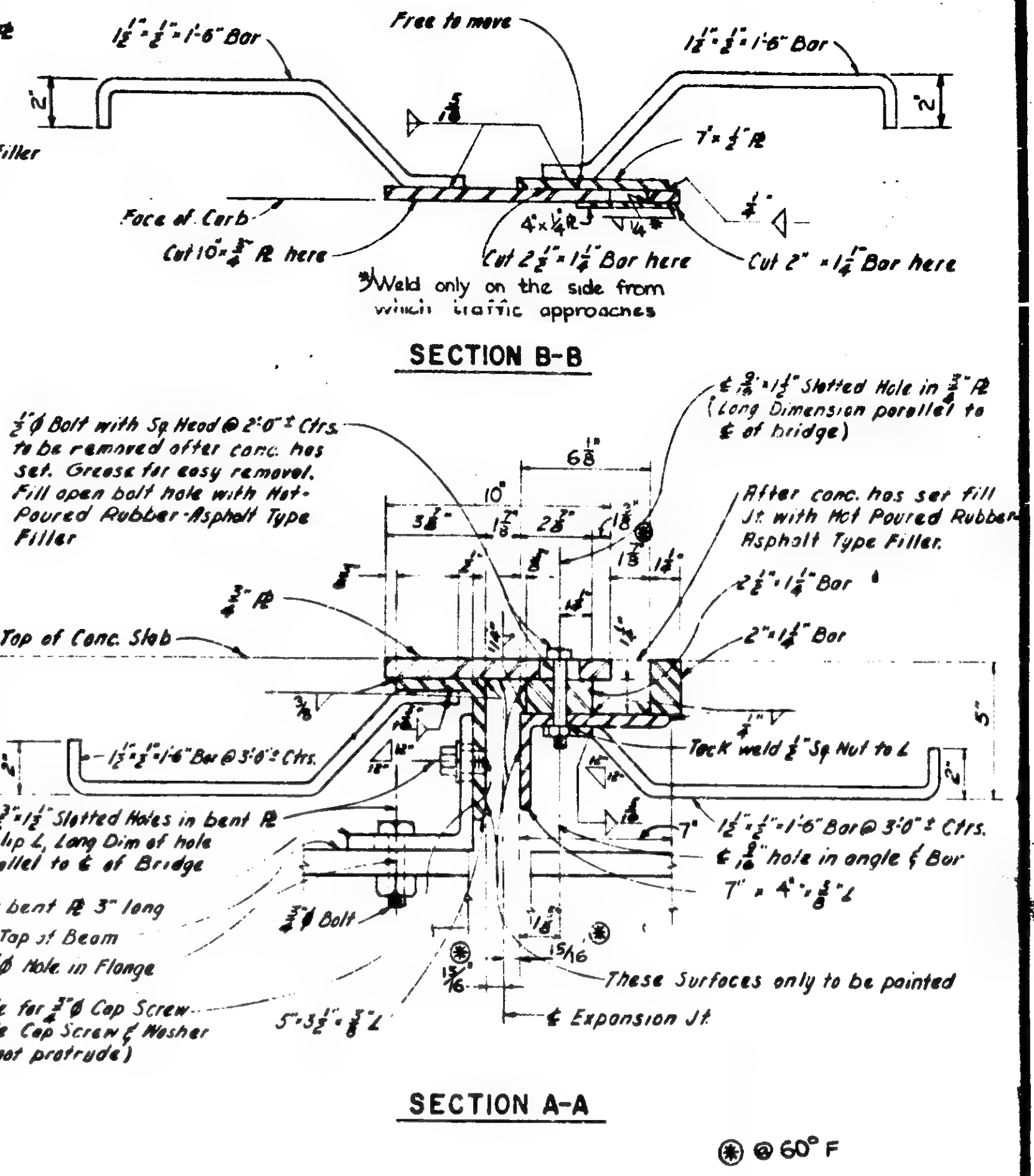
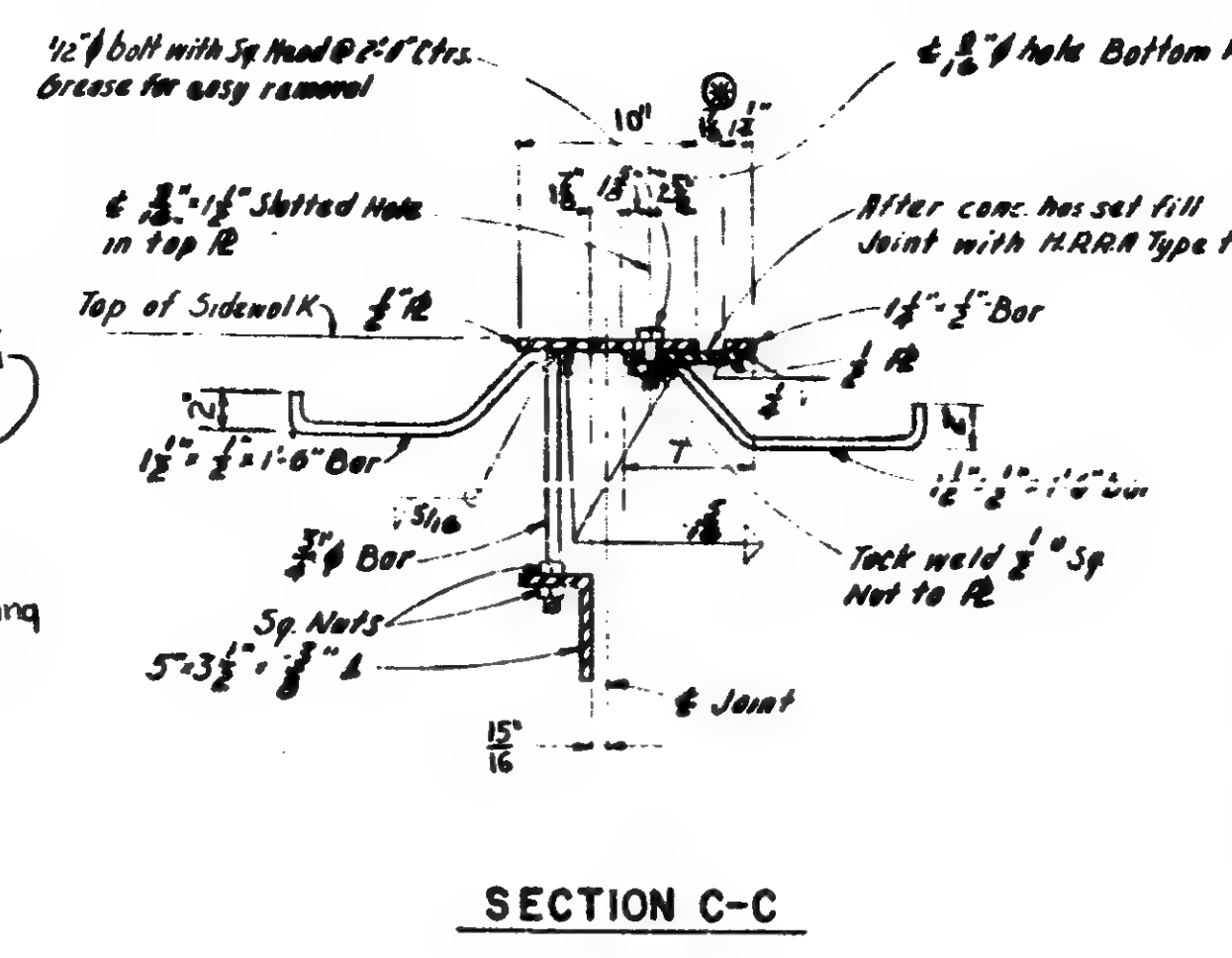
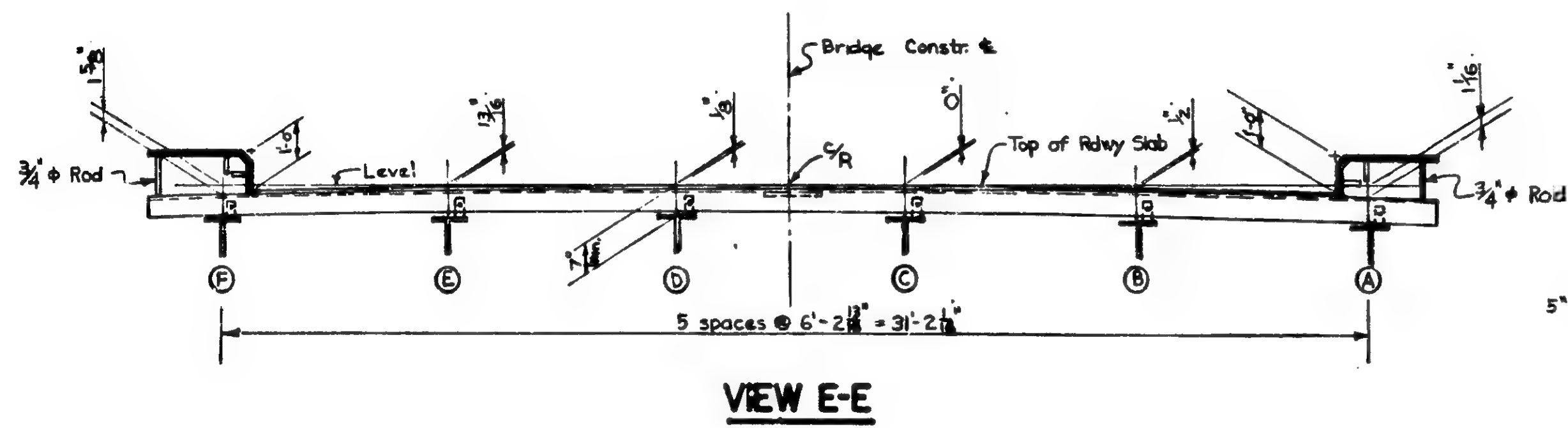
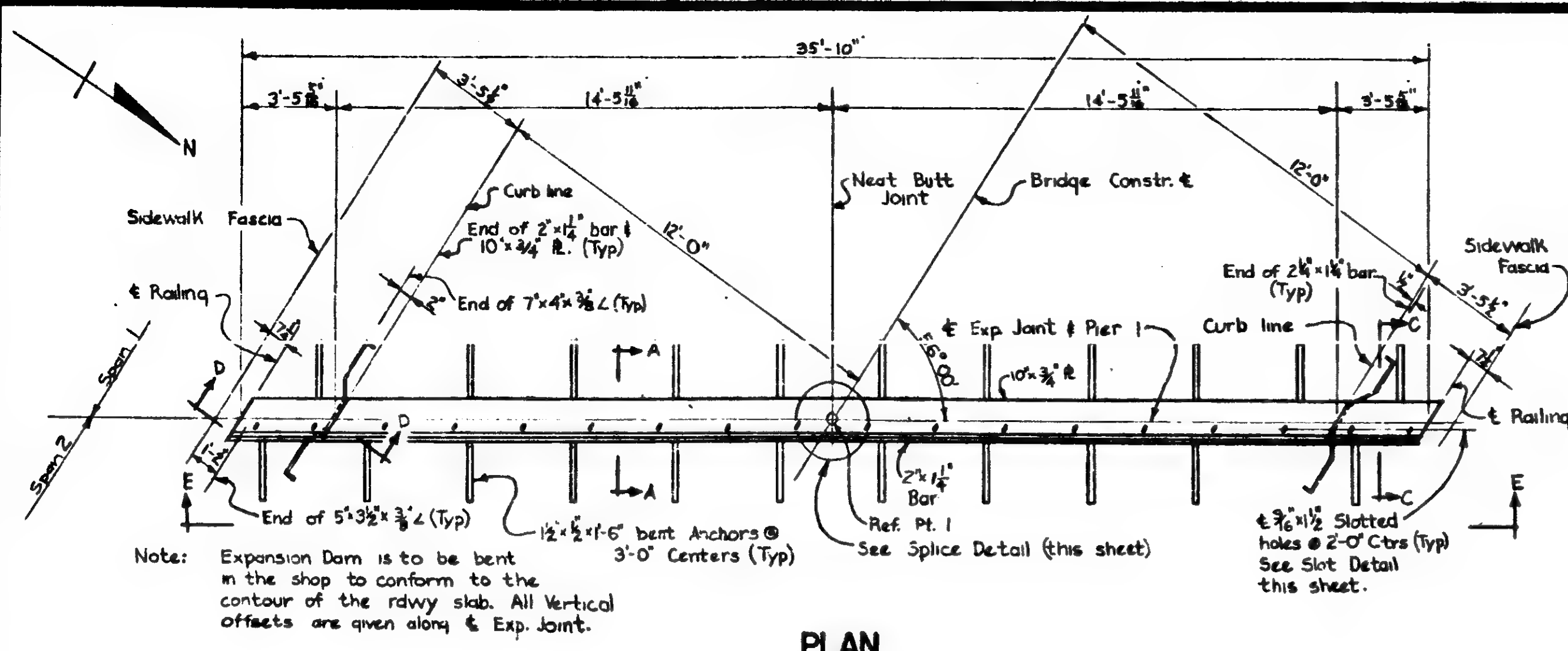
STRUCTURAL STEEL DETAILS

REVISIONS	DATE	BY
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		

DESIGNED BY	11-19-60
DRAWN BY	F.O.C. 10-20-60
CHECKED BY	12-14-60
DATE	12-14-60
SHEET	12 OF 16

B2 OF 16-5-6

1003 of 14093



Work This Sheet With Sheets No. 11 & 12

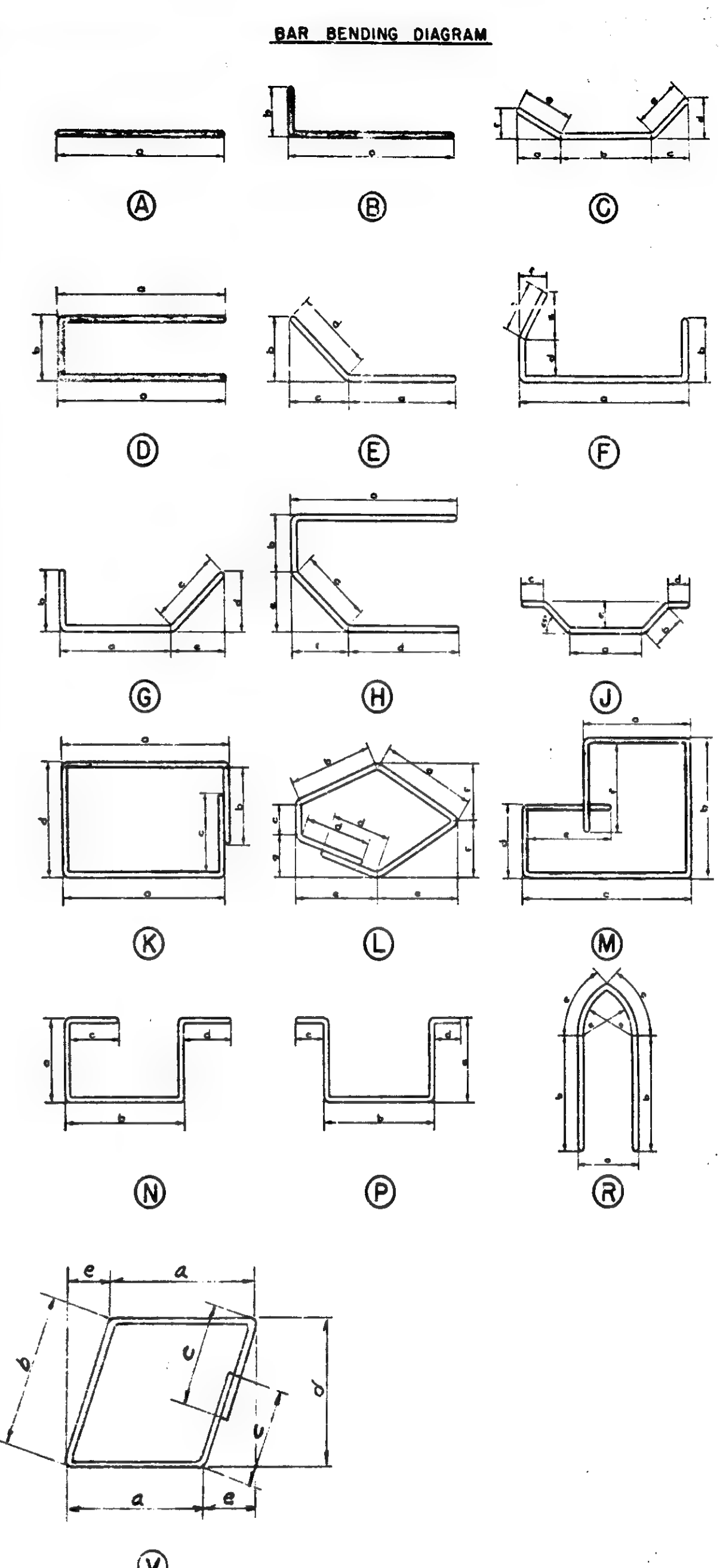
Note: Total weight of Expansion Dam=2148lbs (Included in weight of structural steel Fabrication & Erection Sht.)

MICHIGAN STATE HIGHWAY DEPARTMENT			
EXPANSION DAM DETAILS			
REVISIONS			
NO.	DESCRIPTION	DATE	BY
1	As per	10-24-60	F.D.C.
2	As per	11-19-60	ANTHONY
3	As per	11-19-60	ANTHONY
4	As per	11-19-60	ANTHONY
5	As per	11-19-60	ANTHONY
6	As per	11-19-60	ANTHONY
7	As per	11-19-60	ANTHONY
8	As per	11-19-60	ANTHONY
9	As per	11-19-60	ANTHONY
10	As per	11-19-60	ANTHONY
11	As per	11-19-60	ANTHONY
12	As per	11-19-60	ANTHONY
13	As per	11-19-60	ANTHONY
14	As per	11-19-60	ANTHONY
15	As per	11-19-60	ANTHONY
16	As per	11-19-60	ANTHONY
17	As per	11-19-60	ANTHONY
18	As per	11-19-60	ANTHONY
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25	As per	11-19-60	ANTHONY
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98	As per	11-19-60	ANTHONY
99	As per	11-19-60	ANTHONY
100	As per	11-19-60	ANTHONY

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A1	4'3"							6	4'3"	90	574
A2	7'0"							6	7'0"	90	946
A3	34'0"							6	34'0"	20	1021
A4	33'0"							6	33'0"	20	991
A5	8'3"							6	8'3"	180	2230
A6	34'0"							4	34'0"	20	454
A7	33'0"							4	33'0"	20	441
A8	5'3"							4	5'3"	4	14
A9	11'6"							4	11'6"	8	61
A10	9'0"							4	9'0"	8	48
A11	5'6"							4	5'6"	8	29
D1	2'3 1/2"	1'0"						4	5'6"	12	44
D2	3'8 1/2"	1'0"						4	8'6"	12	68
D3	5'6 1/2"	1'0"						4	12'0"	18	144
Total Weight For Abutments											70650

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A51	40'0"							7	40'0"	16	1308
A52	40'0"							9	40'0"	16	2176
A53	8'6"							6	8'6"	74	945
A54	8'6"							6	8'6"	58	741
A55	21'9"							9	21'9"	18	1331
A56	33'6"							6	33'6"	4	201
A57	33'6"							8	33'6"	12	1073
A58	26'0"							10	26'0"	12	1343
A59	9'6"							6	9'6"	16	228
A60	5'0"							9	5'0"	48	816
A61	20'9"							9	20'9"	18	1270
E51	21'9"	7'0"						9	28'9"	6	537
E52	20'9"	7'0"						9	27'9"	6	526
K51	2'0"	1'5"	1'5"	2'0"				4	8'0"	20	117
K52	1'6"	1'2"	1'2"	1'6"				4	6'0"	19	86
K53	2'6"	1'5"	1'5"	2'0"				4	9'0"	40	260
K54	2'6"	1'5"	1'5"	2'0"				4	9'0"	52	339
V51	1'8 1/2"	1'8 1/2"	1'3 1/4"	1'7 3/4"	0'5 1/2"			4	7'6"	38	190
Total Weight For Piers											13,577

BAR	DIMENSIONS							SIZE	LENGTH	NO. REQ'D	TOTAL WT.
	a	b	c	d	e	f	g				
A101	24'9"							4	24'9"	814	13538
A102	36'0"							4	36'0"	20	481
A103	1'9"							4	1'9"	12	14
A104	3'0"							4	3'0"	12	24
A105	2'3"							5	2'3"	24	56
A106	3'9"							5	3'9"	24	94
A107	5'3"							5	5'3"	24	132
A108	6'9"							5	6'9"	24	169
A109	8'3"							5	8'3"	24	206
A110	9'9"							5	9'9"	24	244
A111	11'3"							5	11'3"	24	282
A112	12'9"							5	12'9"	24	319
A113	14'3"							5	14'3"	24	357
A114	15'6"							5	15'6"	24	398
A115	17'3"							5	17'3"	24	432
A116	18'6"							5	18'6"	24	463
A117	20'0"							5	20'0"	24	501
A118	21'9"							5	21'9"	24	545
A119	23'0"							5	23'0"	24	576
A120	24'6"							5	24'6"	24	613
A121	26'0"							5	26'0"	20	542
A122	27'6"							5	27'6"	24	688
A123	29'0"							5	29'0"	24	726
A124	30'0"							5	30'0"	24	753
A125	36'3"							5	36'3"	16	605
B101	3'0 1/2"	9"						4	3'9"	800	753
D101	6'1/2"	1'6"						4	2'6"	600	1002
K101	3'2"	11 1/2"	11"	1'3 1/2"				4	6'3"	8	33
M101	2'2"	1'3 1/2"	3'2"	10"	1'7"	1'1"		4	10'0"	40	267
Total Weight For Superstructure											43387



Note:-
All right angle bends in
Reinforcing Steel to be made
about a pin of the minimum
diameter allowed by the Standard
Specifications.

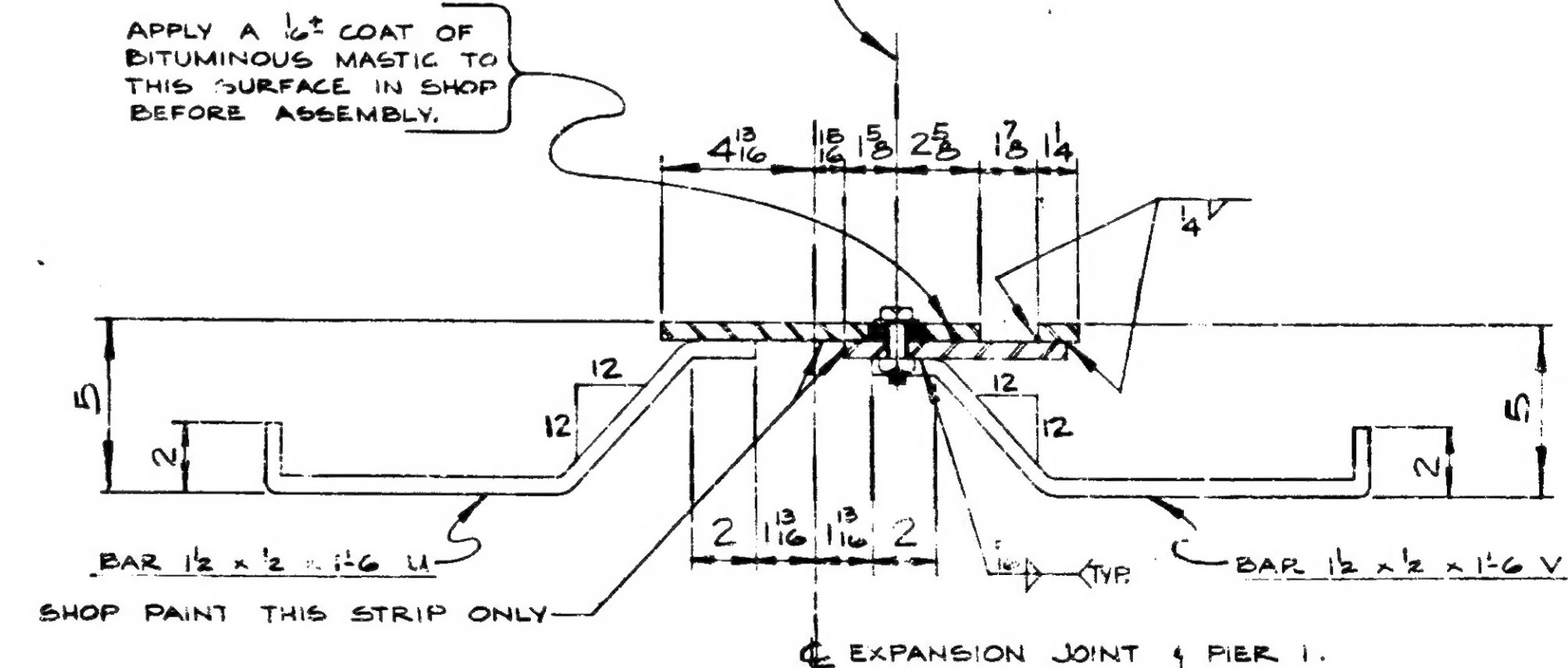
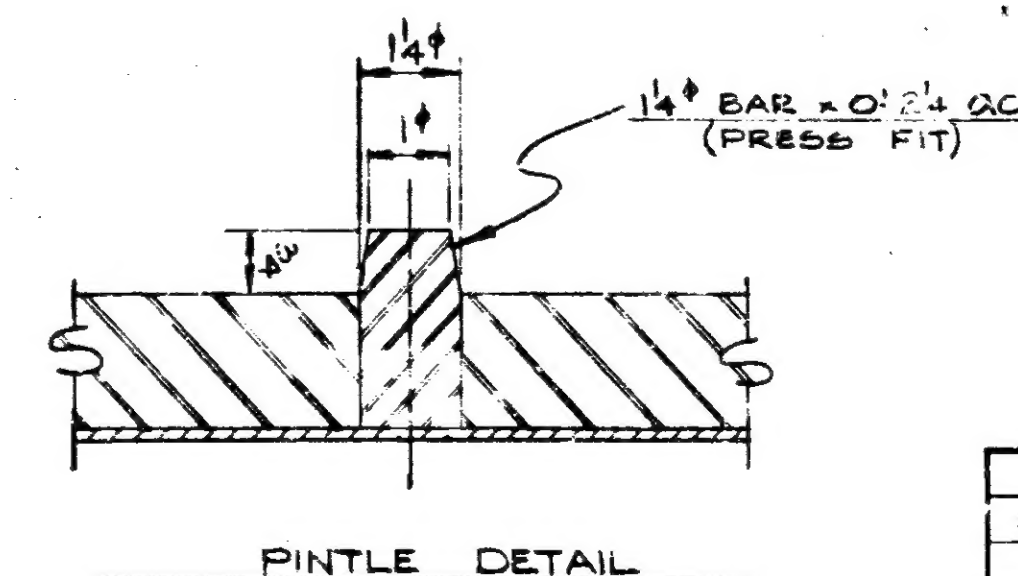
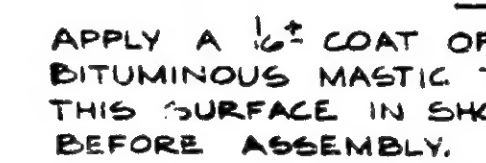
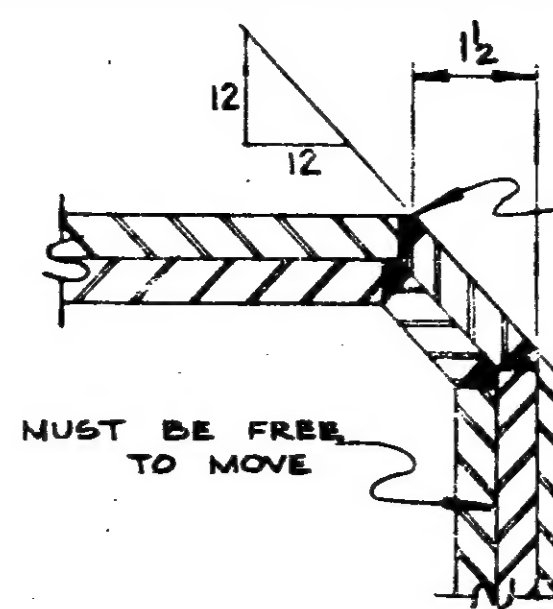
Grand Total Steel Reinforcement 64,029 *

MICHIGAN STATE HIGHWAY DEPARTMENT

STEEL REINFORCEMENT DETAILS

NO.	REVISIONS	DATE	BY

DESIGNED BY: Russman, H-15-60
DRAWN BY: E.C.H. 11-16-60
CHECKED BY: F.O.C. 11-17-60
SHEET 14 of 14
B2 of 16-5-6



REVISION				F. YEAGER	
NO.	DESCRIPTION	DATE	BY	BRIDGE & CULVERT COMPANY	
				1701 KEARNEY ST. — PORT HURON, MICH.	
				BRIDGE B2 OF 16-5-6, C1	
				.75 (US27 RELCC) S.B. CROSSING RONDO	
				ROAD, 3.6 MILES N.E. OF WOLVERINE,	
				CHEBOYGAN COUNTY.	
				MICH. BRIDGE CONSTRUCTORS, CONT'R.	
				DATE 3-31-61	JOB NO.
				BY JAM	R 21211
					SHEET 4 OF 4